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FREE TENDON GRAFTS IN THE FINGERS—REPORT OF CASE*

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Jacksonville.

A close study of the anatomy of the hand will reveal a marvelous mechanism of tendons, joints and ligaments which act as pulleys. It will be noticed that these tendons glide with remarkable ease through tissues, under pulleys and over joints. This gliding mechanism, the most important requisite for successful tendon grafting, was first explained by Biesalski and Leo Mayer.[1] Mayer found that "the tendon sheath was merely one element in the gliding mechanism and that the range of motion above the sheath was fully as great as within the sheath." Tendon sheaths act to lessen friction around a corner, but the ability of the tendon to glide through tissue in the straight part of its course, where no sheath is present, is made possible by a loose areolar tissue, the paratenon. It is this fatty elastic tissue which must be preserved when a tendon is grafted.

If a tendon has been gutted by a previous infection or injured beyond repair and nothing remains but a mass of scar tissue, it should be removed and a new one grafted in its place. Whole parts of such a tendon will have sloughed away and its muscle will be so contracted that it will be impossible to suture the ends at the proper tension.

FIG. 1

Normal relation of flexor tendons of hand showing phalangeal annular ligaments (ligamenta vaginalia). Black shows length of flexor tendons involved in case reported. (Sabotta-McMurrich Anatomy.)

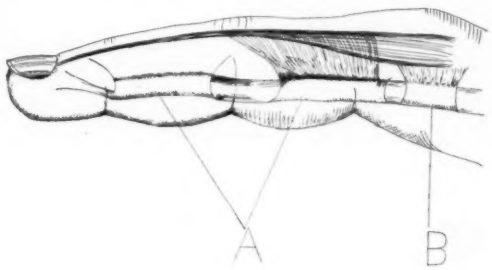

FIG. 2

Diagram showing normal relations of annular ligaments or pulleys to flexor tendons. A—Phalangeal annular ligaments. B—Transverse metacarpal ligament. (Nelson's Surgery.)

Sterling Bunnell,[2-3-6] who has probably repaired more crippled hands than any man in the world, has formulated certain principles for tendon grafting. The most important of these is the restoration of the gliding mechanism already referred to. Free tendon grafts with paratenon tissue may be obtained from the palmaris longus in the forearm or from one of the extensor tendons of the toes. Small pieces of these tendons may be used to replace pulleys. Pulleys are ligaments which hold a tendon in its path close to the bone. If they are not replaced or repaired the tendon will be displaced forward like a bowstring when the finger is flexed. (Figs. 1 and 2.)

The site of the incision is most important and in the fingers it should be mid-lateral between the two lateral arteries. The old mid-longitudinal incision crosses flexion creases at right angles and causes contractures and binding adhesions along the tendon. Bunnell is very emphatic about the dangerous effect of the mid-longitudinal inci-

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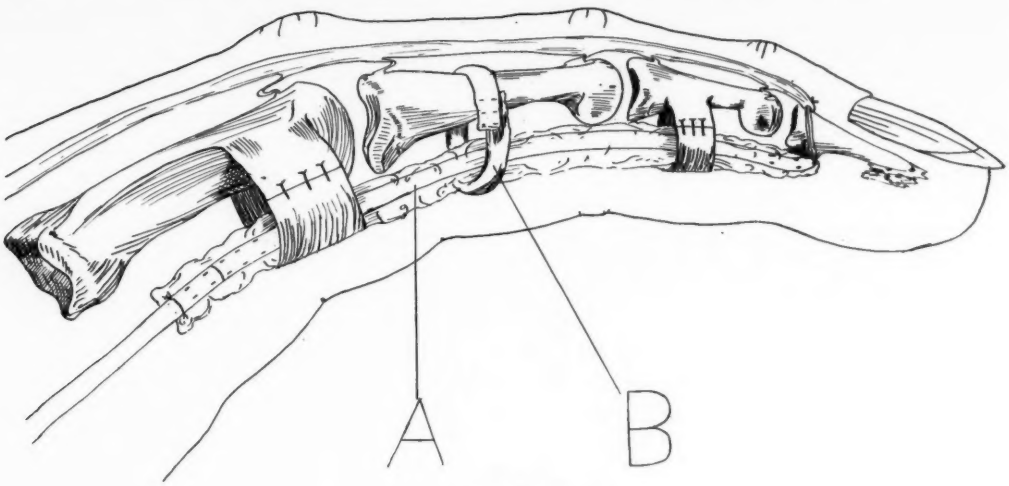


FIG. 3

Diagram of reconstructive operation. A—Free tendon graft replacing destroyed flexor tendons. B—Free tendon graft used to replace proximal phalangeal ligament. (Modified from Bunnell; J. of Bone and Joint Surg., Vol. X, No. 1, January, 1928.)

sion which cuts pulleys and causes deformity. It should not be used in repair work or to drain pus from a tendon sheath.

With regard to technic, it should be as atraumatic as possible. Constant sponging and rough manipulation cause more scar tissue to form and give poor results. All dissection should be done in a bloodless field. This may be obtained with an Esmarch's bandage and a tourniquet. Little sponging will be necessary and blood vessels, nerves and other delicate structures will be plainly visible. As much scar tissue as possible should be removed by block dissection before a tendon is placed in its new bed. Tendons should be sutured with fine silk spliced into each end for the distance of about one inch and the knots should be buried between the two ends. In order that the proper tension may be obtained, the principle for uniting tendons as determined by Mayer[1] should be followed. "When the origin and insertion of a muscle are approximated as close together as possible, the tension of the tendon should be zero." However, a muscle whose tendon has been severed a long time will be found to be contracted and a little longer graft will be necessary.[4]

Before any repair work is attempted, the question of free motion in the joints should be considered, for it is useless to replace tendons in a finger with stiff joints. Such joints may be mobilized by steady elastic traction with some type of banjo splint.

After-care is important. If the muscles of the repaired tendon are placed in the position of greatest relaxation, motion may be started the day following the operation. Exercise must be persistant, for adhesions are slow to give way and it may take a year for satisfactory results to be obtained.

The following case of tendon grafting in a finger, while not an unusual procedure in itself, is reported because of the unique physical disability that was present:

Report of Case

F. B., a young man aged 19, was admitted to St. Luke's Hospital December 5th, 1929. His only complaint was that he could not flex his right index finger. He stated that he was an orphan without means of support for the future and wished to enter the army. He had, however, just been turned down by the army medical examiner because he could not pull the trigger of a gun with his right index finger. His past history brought out the fact that he had had a severe infection of that finger nine years previously and his disability dated from that time.

Physical examination showed the two distal phalanges flexed about 10 degrees from the horizontal. Fortunately, all the joints were freely movable. He could flex the proximal phalanx fairly well due to the action of the lumbricale and interosseous muscles, but he could not to the slightest degree flex the middle or the distal phalanx, separately or together. No scars were visible on the surface, but the flexor tendons could

be felt as a hard mass of scar tissue along the palmer surface of the finger.

The first stage of a reconstructive operation was done under ether anesthesia December 6th, 1929. A mid-lateral incision was made over the right index finger and an L-shaped incision in the palm. Both the flexor digitorum sublimis and the flexor digitorum profundus tendons were found to be a mass of scar tissue with the two distal pulleys or annular ligaments destroyed. Opposite the proximal phalanx about an inch of the tendon had sloughed away. The transverse metacarpal ligament was intact and normal tendon was found about the middle of the palm. Because of the time consumed, the wound was closed and a second stage done December 14th, 1929. The scarred flexor tendons and surrounding scar tissue were removed. A piece of the palmaris longus tendon 10 cms. long was removed from the forearm. One end was sutured to the flexor digitorum profundus tendon in the palm. The other end was attached to the distal phalanx by silk sutures passed through a drill hole in the bone. Another section of the palmaris longus tendon was wrapped around the proximal phalanx and the tendon to form a pulley. (Fig. 3.) The metacarpal ligament was repaired with 00 chromic catgut and the wound closed with interrupted dermal sutures. Exercise was commenced the day following the operation. The wrist was held in acute flexion for one month. All induration had disappeared in six weeks and today, five months following the operation, the patient can flex the middle and distal phalanges about 80 degrees. (Fig. 4.) He is now able to hold a pen firmly between this finger and thumb when writing and he can pull the trigger of an army rifle and automatic pistol.

BIBLIOGRAPHY

1. Mayer, Leo: The Application of the Physiological Principles to Tendon Transplantation. Am. J. Surg., xxxii, 1 Jan., 1918.

2. Bunnell, Sterling: Repair of Tendons in the Fingers and Description of two new Instruments. Surg. Gynec. and Obstet., xxvi, 103, Jan., 1918.

3. Bunnell, Sterling: Repair of Tendons in the Fingers. Surg., Gynec. and Obstet., xxxv, 88, July, 1922.

4. Bunnell, Sterling: Reconstructive Surgery of the Hand. Surg., Gynec., and Obstet., xxxix, September, 1924.

5. Garlock, John H.: Repair of Wounds of the Flexor Tendons of the Hand. Annals of Surg., 83:111-112, January, 1926.

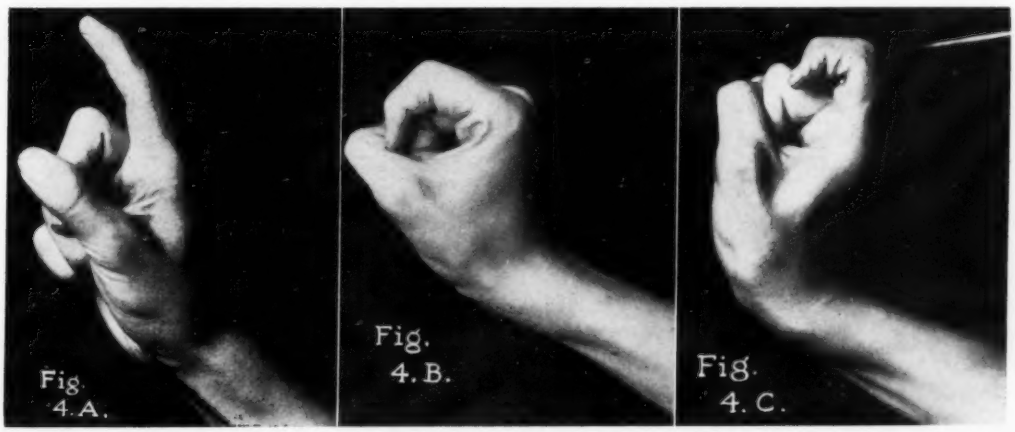
6. Bunnell, Sterling: Repair of Nerves and Tendons of the Hand. J. of Bone and Joint Surg., vol. x, No. 1, January, 1928.

DISCUSSION

Dr. Edward Jelks, Jacksonville:

A sore or stiff finger is serious to the man who has it. I think Doctor Morris is very wise in bringing to our attention this subject. We all have to treat infected fingers from the beginning of the infection to the ultimate result. Therefore, we are familiar with what he had to deal with in trying to get a good finger out of one which was crippled.

There are one or two points I would like to mention which, if observed, are helpful in preventing sloughing of tendons or, should the tendons slough, are helpful in making a plastic operation more successful. The first point is that of drainage. Sometimes we treat infected fingers by applying a wet dressing with the hope that the infection will clear up. Usually it will. But we should remember, as Doctor Morris urges, that if we use early lateral incision extending down into the area of infection, sloughing of the tendon will rarely take place. Another point of impor-



Photographs showing amount of flexion restored five months following operation. Fig. 4.A. Right index finger extended. Fig. 4.B. Voluntary flexion. Fig. 4.C. Voluntary flexion with proximal phalanx supported.

tance with reference to drainage is that it is wise when there is swelling or redness at the base of the finger to make an incision into this. Pus may not be obtained, but incising the area of induration relieves some of the constricting pressure about the base which is interfering with the blood supply of the finger.

It is most important in treating these infected fingers to preserve motion, since a reconstruction operation is contra-indicated in presence of a stiff joint. Frequently, we put a splint on a finger when it is infected. The patient himself will hold the finger stiff if you do not urge him to move it. It is best to begin early the use of heat and passive movement. This is important in preserving motion. Remembering that some fingers will get stiff in spite of all that can be done, they should be held constantly in the position of election. Be slow in keeping infected fingers splinted at all and never completely extended.

I want to congratulate Doctor Morris on his admirable presentation of a good piece of work. He has brought out some very important principles for dealing with infections of the fingers.

Dr. W. W. Massey, Quincy:

This paper is probably of more interest to me than any other man here, for the simple reason that I have just gone through with an infection of right hand, beginning in the index finger. The finger is gone, I do not regret it, but it might have been saved. I did not have it removed until the infection had cleared up and was advised by some of the best men in the country that I would have a more useful hand without the finger. If I had known of Dr. Morris' work I would have given him a chance on my case, since we do not like to lose fingers.

I had practically the same condition as he reports, that is, the loss of the flexor tendon and involvement of the capsules around the joints. The infection started from a needle prick in finger while doing a pus case. About thirty-six hours after I got this prick, with no bleeding at the time, it got hard where the needle went in. I had a severe infection and was knocked out for three months. Lost about 60 to 65 pounds. A great effort was made to confine the infection to index finger by free drainage. However, the capsules of all joints in hand were more or less involved and the hand and fingers were very stiff and useless. After eight months' effort all joints responded except the index finger to some extent, and it was then that I had the finger removed. Upon dissecting the finger, after its removal, no extensor or flexor tendons were found.

I just want to give you this warning, especially to the men doing surgery: You better watch out, or some little bug might get you.

Dr. Kenneth Morris, Jacksonville (concluding):

I want to thank Doctors Jelks and Massey for their discussions.

RATIONAL X-RAY AND RADIUM THERAPY*

WALTER A. WEED, M.D.,
Lakeland.

In a word of explanation, I should like to say that this paper is in no way an attempt at a scientific dissertation on the therapeutics of radiant energy. I wish merely to bring to you some of the conclusions drawn and convictions deduced from my own observation and experience during the past sixteen years, which I hope may be of some value in clarifying some of the misunderstanding that prevails relative to the proper place that should be accorded X-ray and radium in the treatment of disease.

The accidental discovery of the X-rays by the German-Swiss, Roentgen, in 1895, antedates the inadvertent discovery of the power of radium rays by the Frenchman, Becquerel, by only one year. Therefore, the development of their use in medicine has been more or less concurrent and covers a comparatively short period.

Scarcely had the diagnostic wonders of the X-ray been brought before the world than the X-ray operators and clinicians became cognizant of the deleterious effects which followed prolonged or frequent exposures for diagnostic purposes. Thus, a new force was placed in the hands of physicians, the value of which could only be determined by years of experiments and experience, which necessarily were fraught with the usual pro rata of disasters and disappointments incident to the study and mastery of any powerful agent.

Likewise, when Becquerel placed a tube of Uranium in his vest pocket for safekeeping and found, several days later, a rather intense burn on his abdomen, he discovered a new force, the harnessing of which has not been without its mistakes and regrets.

However, the fact that both X-rays and radium

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rays are destructive, and if misused can do irreparable injury, is a tribute to their potency, and is no argument against their judicious use.

By way of interpolation, I should like to say that to my mind this is true of practically all physical agents, and even of individuals. That is, the more potent an agent or an individual is for good, the more powerful that same agent or individual can be for evil if misused or misguided.

Thus, fire, water and air are among God's most wonderful and beneficent gifts, but none of us are hankering for a holocaust, a flood, or a cyclone. Likewise, Saul of Tarsus, was a notoriously bad man, but when he turned his intellect and energy into the channel of righteousness, and became the apostle Paul, his accomplishments for good were unparalleled.

Therefore, the inherent potentialities of the agents under consideration have occasioned much unjust criticism because of misuse or misunderstanding by those who have attempted to use them, and many of the fallacies and inconsistencies incident to their use, past and present, are in a measure thus explained.

There are, of course, many reasons that contribute to the existing divergencies of opinion as to the indications and value of radio-therapy. However, it is useless to enter into the details of controversy, for, as a matter of fact, everything and everybody of importance are controversial objects and always will be, and practically all momentous reforms and all great advances come slowly and are harassed, pestered and hindered by the assaults of selfishness, ignorance and prejudice.

But, after all is said and done, the indications and contraindications for the therapeutic use of radiant energy are very clearly defined, and the benefits and results occasioned by its use constitute one of the greatest blessings to suffering humanity. In this connection, it might be said that in no field of medicine is the importance of the "personal equation" more paramount than in qualifying as a radiologist. In the first place, the man who adopts this as his specialty should, above everything else, be honest and unprejudiced. Because he happens to have ten, twenty, or more thousand dollars invested in his therapeutic armamentarium is no reason for him to attempt to treat an early carcinoma of the breast, for instance, when this condition primarily belongs to the skilled surgeon. He should be the first man to recognize not only the definite indications for his services, but should know his limitations as well. He should be able, by knowledge gained from study, observation and experience, to weigh the relative merits of his specialty as compared with other recognized methods and have the moral courage to accept the better method even if it should be to his financial detriment. He should know not only the physics of X-ray and radium, and the principles of dosage, but should be somewhat of a mechanical genius as well, in order to design and build suitable applicators to treat the condition in question. A thorough appreciation of the importance of the last-mentioned prerequisite, as elementary as it may seem, has enabled me to treat successfully many, many cases that otherwise I should have failed to relieve.

Another important attribute that might be mentioned is the ability to evaluate and correlate the use of other adjuncts that properly belong to the radiologist. For instance, it is absurd to treat a large protruding ulcerating malignancy with X-ray or radium without first removing the mass by fulguration or thermo-coagulation, which can be done painlessly and without the loss of blood. Thus, one can get right down to the base of the tumor with the first X-ray treatment, and incidentally reduce very materially the number of treatments, and the expense to the patient.

The question of dosage is extremely important. In the first place, insufficient dosage invariably means failure, whereas sufficient dosage may mean success. Because an epithelioma, for instance, has had repeated X-ray treatments and has not responded, does not mean that that same epithelioma is not amendable to X-ray treatment. Secondly, as a rule, frequently repeated fractional treatments are not necessary in most X-ray therapy procedures. As an illustration, an epithelioma can be, in my opinion, more successfully treated by one or two heroic doses than by often repeated fractional doses. Several years ago I coined an X-ray therapeutic maxim, which I have never had occasion to change—that is: "Relatively small areas may be treated with impunity provided the surrounding tissues are properly protected from radiation, whereas, in treating over-large areas of sound skin, one can not exceed certain dosage limitations without courting disaster." This is literally true and is extremely significant as applied to the early treatment of malignancies involving the cutaneous or mucous surfaces.

As to the indications, contra-indications, the relative merits, and the results of X-ray and radium therapy, I could not begin to cover the field

in a paper of this nature, and shall only attempt to bring to your attention a few of the more important and practical things which might be of interest to you.

When we think of X-ray treatment, we doubtless almost invariably associate it with skin cancer, and rightly so. Practically one hundred per cent of epitheliomata can be cured by X-rays if treated early and properly, and without pain or inconvenience. In my experience, radium is in no way superior, in the treatment of these cases; however, fulguration and thermo-coagulation are invaluable adjuncts in selected cases. Suspicious pigmented moles should be removed by thermo-coagulation and the base treated thoroughly with X-ray. In treating epithelioma about the eyelid, I make a saucer-shaped lead protector covered with rubber, and place it beneath the eyelid before giving treatment. When the growth is accessible I always use X-rays instead of radium. Radium is infinitively preferable when treating in cavities. Cancer of the lip is best treated by a combination of thermo-coagulation and X-ray, and the treatment should be done courageously without any half-way or piecemeal measures. And don't be misguided by the enthusiasm of those who insist in the promiscuous and indiscriminate use of radium needles or radon implants. They doubtless have their indications, but in most instances, safer and more satisfactory work can be done without them. Carcinoma of the breast is primarily a surgical condition. Radiation may be used advantageously post-operatively, also in inoperable and recurrent conditions. In cancer of the cervix, the choice of treatment depends in a great measure upon the skill and facilities available—both surgery and radium offer much if operated or treated very early; both offer little in the later stages. The present trend is toward radium as the more recent statistics tend to confirm the wisdom of such a policy, especially in view of the mortality incident to the operation. While in the treatment of cancer of the uterine body, the divergence of opinion is more clearly emphasized, there being good authorities on both sides of the question. My personal opinion is that the preponderance of advantage is not great on either side so far as end results are concerned, especially when taking into full consideration the mortality and morbidity incident to operation. Both offer much in the early stages, but little in the advanced stages.

Another class of cases in which both radium and X-ray have very definite indications is benign uterine hemorrhage, which may or may not be associated with uterine fibroid. Certainly one should not treat all cases of menorrhagia and metrorrhagia, nor all cases of uterine fibroids with radium or X-ray. For instance, in young women in which the preservation of the menstrual function is an important factor, other measures should be given first consideration. Likewise, in very large fibroids in which there are pressure symptoms, or in pedunculated submucous fibroids, surgery certainly should be given first consideration. In selected cases of menorrhagia, metrorrhagia, and uterine fibroids I know of no more rational treatment than X-ray or radium, nor more satisfactory results in the entire domain of medicine. In those cases of menstrual aberrations at or near the menopause associated with irregular or excessive bleeding, and in which there may or may not be a suspicion of malignancy, I know of nothing more nearly a specific than radium or X-ray, and of the two agents, radium is by far the more valuable. I have treated literally hundreds of these cases with approximately one hundred per cent satisfactory results, and, so far as I know, in not one instance has cancer developed in those cases in which there was merely a suspicion of malignancy, but which was not demonstrable at the time of treatment. I feel convinced that it is reasonable to assume that a certain percentage of those cases, even though it may be a small percentage, are due to incipient carcinoma. Therefore, in my opinion, the results obtained are, indeed, a tribute to the efficacy of radium, and emphasize most forcibly the necessity of early treatment.

In the treatment of naevi, radium is unquestionably superior to all other methods. However, X-ray properly given in selected cases gives excellent results.

There are many other conditions in which X-ray and radium stand out pre-eminently as therapeutic agents, such as persistent thymus, keloids, acne vulgaris, polyps, etc., the results obtained being in a large measure commensurate with the skill of the radiologist.

CONCLUSIONS

(1) A combination of X-rays, radium and electro-coagulation in judicious, experienced and skillful hands constitutes one of the greatest weapons known in combatting certain physical ills; one whose indications are most clearly defined, and results most certain, but which is a positive menace if misunderstood and misused.

(2) The selection of cases, and, in many instances, the stage at which treatment is instituted, are of paramount importance.

(3) The radiologist who has as much as one hundred milligrams of radium, in addition to a modern X-ray therapy machine and diathermy machine, and who knows how to use them separately and conjointly, can show results comparable with those obtained in large institutions in which large amounts of radium are available, except in cases like carcinoma of the prostate or aesophagus, in which specially built apparatus for the introduction of larger quantities is used.

(4) My experience is that the X-ray can supplant, for all practical purposes, the use of radium, except in treating in cavities, and in the treatment of naevi.

(5) Practically all accessible malignancies involving the skin and mucous membrane, excepting melanotic tumors, are curable if treated early —practically all are hopeless in the later stages.

(6) In the treatment of relatively small circumscribed areas of malignancy, the so-called fractional treatments, often repeated, do not yield as satisfactory results as the more intensive and less frequent treatments do.

(7) Deep-seated malignancies, with the exception of lympho-sarcomata, do not yield satisfactorily to X-ray and radium treatment, and such deep-seated tumors as carcinoma of the stomach and intestine are primarily surgical and should be operated at the earliest possible moment. X-ray and radium may be used as an adjunct. However, it is my opinion that in such cases their real value may often be questioned.

DISCUSSION

Dr. J. M. Hoffman, Pensacola:

I believe that Dr. Weed has covered a very timely subject in this paper. The attitude of the public in general is very unfavorable. I have had some experience, myself, with unskilled technicians with X-ray machines and have seen some very disappointing results. This is one field where the operator must be skilled in his particular line. Frequently the average physician or general practitioner who is not connected with the larger schools sees these results and obtains the impression that radiology and roentgenology are not of value.

In these indications as Dr. Weed mentioned: In the treatment of skin cancer I, personally from my own experience, feel that it is about 50-50 with X-ray and radium. Of course, some of our surgeons. men like Bloodgood, feel that even skin cancer is a surgical procedure if done thoroughly. You are familiar with the operation where he removes all lymphatics that drain the part. However, I believe that the ordinary superficial skin malignancy can well be handled with radiation. In cavities, of course, radium is the method of choice.

One contraindication that Dr. Weed did not mention is the question of cyst of the ovary. I saw one case in particular of necrosis in the wall of an ovarian cyst that caused some real trouble.

The paper is very timely, and I appreciate Dr. Weed's presenting the subject.

Dr. Walter A. Weed, Lakeland (closing):

There is nothing further that I wish to say except a passing reference to contraindications as suggested by Dr. Hoffman. There are, of course, a number of contraindications that I did not mention, and which could not be covered adequately in a paper of this character. One contraindication that should always be kept in mind is pelvic inflammation. There are a number of others with which every physician should be familiar.

PROTEINS IN HUMAN PATHOLOGY*

T. M. Rivers, M.D.,
Kissimmee.

Definition: Proteins are nitrogenized colloid compounds forming the characteristic constituents of the tissues and fluids of animal bodies. They are widely distributed throughout the vegetable kingdom as well as the animal kingdom. They are made up of amino acids and their derivatives which are first formed by plants and received by animals, either as food for tissue building and repair, or as foreign material to injure and destroy animal tissues.

Chemistry: The protein molecule is made up of the five basic elements, carbon, hydrogen, oxygen, nitrogen and sulphur and may contain other elements in some of the tissues. The molecule is very large, its atomic weight sometimes running into the thousands. Analytically, it can be studied no better than through the processes of digestion, absorption, assimilation and elimination. We learn that food proteins taken into the stomach are of molecules too large to be absorbed through the healthy walls of the stomach; but

*Read before the Orange County Medical Society, Orlando, Florida, April 16, 1930.

they are here broken up by the action of the pepsin and hydrochloric acid into fractional molecules called peptones and proteoses. These are passed on into the intestines where they are again divided by the trypsin and other intestinal ferments into smaller fractional molecules, and finally into amino acids which may be considered the basic units of the proteins. It will be observed that the proteins and their fractional molecular units all the way down to the amino acids, are colloids; but the amino acids are crystaloids, which have a greater solubility and therefore a greater capacity for being absorbed. Once the amino acids are carried through the mucous membrane of the intestines they are carried by the portal circulation to the liver where the liver cells serve as inspectors, passing some of these amino acids on as good building material, or good building stones, as Von Furth so aptly designates them, reconstructing others so that they are made good building stones, and, finally, rejecting others as useless fragments, converting them into urea and passing them on to the kidneys where they are thrown out as worthless material. The good amino acids are carried by the blood to the various tissues of the body where they are assimilated and built back into tissue proteins for repair or growth of the various tissues of the body. Now it may be observed here that the amino acids are about twenty in number. Chemically, they are made up of the acid radical, COOH, and the alkaline radical, NH_2, so that the amino acid may be built to from either radical, serving either as acid or as base or both. These simple amino acids may combine acid to base, forming a dipeptid. These may combine further, forming polypeptids. It is by these combinations that we get back to the protein molecule. However, it is here that we may observe occasional sidestepping from the regular synthesis of the protein molecule. By eliminating CO_2 from the amino acid an amine may be formed which may be highly toxic, doing great bodily injury instead of the normal tissue-building. We will remember that the blood of the human should be very slightly alkaline, almost neutral; and any variation from this alkalinity means disease. Now, if some other acid should combine with the base end of the amino acid so as to form a strongly acid amino acid, we can readily understand that we may approach an acid condition of the blood, which would be a morbid condition of the body and result in serious morbidity if exaggerated.

Classification: Based on the chemical formation and action of proteins, there are three general classes. First: Simple proteins, or proteins which yield only a-amino acids or their derivatives on hydrolysis. They are albumins, globulins, glutelins, albuminoids, histons and protamins. Second: conjugated proteins, proteins which have the protein molecule united to some other molecule otherwise than as a salt. They are nucleo-proteins, glycoproteins, phosphoproteins, hemoglobins, etc. Third: derived proteins, that is, derivatives of the protein molecule formed by hydrolytic changes. They are proteoses, peptones, peptids, etc. Besides this general classification there are numerous irregular classes of proteins, as bacterial proteins, produced by bacterial action or by maceration of the bodies of bacteria; defensive or protective proteins, which are formed in the body to counteract toxic proteins or the bacteria producing them, as alexins, phylaxins or sozins. Soluble proteins are those which may be passed into solution with some liquid while insoluble proteins are those which are precipitated when others are dissolved.

Absorption, Assimilation and Elimination: Protein molecules, as we learned above, are of very large size and are of colloid consistency so that they are filterable and are barely capable of being absorbed through healthy mucous membranes of the human body. As we know, most foreign proteins are not of the proper structure to be assimilated into the tissues of the human body, and many of them are actually toxic. Such food proteins as milk and eggs injected directly into the blood, are not assimilated but are eliminated as such from the kidneys. While proteins are not absorbed as such by, or through, the healthy mucous membranes, they may be absorbed through the abraded or diseased mucous membranes, and, in this way, enter the tissues and become a menace to the health of the body. This may account for some escaping the toxic action of spoiled meats in cases of botulism, while others are poisoned by eating the same meats. It is a common saying among the laity that one may suck the poison from a snakebite with impunity, if he has sound teeth, while the same act is dangerous for one with decayed teeth. It is even probable that one might swallow the poison from the snake without injury if his alimentary tract were in perfect condition and in healthy state in every part. We may observe an application of this in the onset of asthma. The asthmatic may

live in the midst of the sensitizing protein without an attack till some change in the weather conditions causes the mucous membranes of the upper air passages to swell from a common cold. Immediately upon swelling the foreign sensitizing protein inhaled is absorbed and an attack of asthma is precipitated. Many asthmatics have some chronic inflammation of some part of the upper air passages, of the nose, the tonsils, or the throat, due to tuberculosis, syphilis, or other infection, which makes possible the absorption of the sensitizing protein at all times. Asthmatics with chronic inflammations usually continue to suffer from asthma as long as they are in the vicinity of the sensitizing protein. These cases may be relieved to a great degree by healing the diseased mucous membranes through which the sensitizing protein is entering the body. The albumen of eggs sometimes serves as sensitizing protein and its absorption may be prevented by treating an ulcerated or catarrhal stomach. There can be little doubt that people, otherwise healthy, suffer from general or localized rheumatoid pains caused by the absorption of undigested foreign proteins through the diseased or ulcerated mucous membrane of some part of the alimentary tract.

In the investigations and study of absorption through membranes, it has been well established that certain substances may be absorbed through in one direction, but the same substance may not be passed back in the opposite direction. Just such provision is made in the structure of the human intestinal tract. The amino acids may be normally absorbed from the lumen of the intestines to the blood of the opposite or outer side of the intestinal mucous membrane; but the normal mucous membrane of the intestines will not permit these same amino acids to pass back from the blood to the lumen of the intestines: a wonderful provision of nature to hold and conserve all that food which has been absorbed. While much of the waste products of the body is eliminated by the skin and the lungs, the kidneys serve as the great outlet for the waste products of protein metabolism and catabolism. The healthy mucous membrane of the tubules of the kidneys, unlike that of the alimentary tract, may permit the passage of large molecules, even those of whole proteins being readily discharged if they are foreign to the body requirements. The kidney cells have selective action in excreting and will not permit the passage of those proteins which are of further use to the body tissues so long as these cells are healthy and the internal pressure of the blood is not too great. As we all know, we are inclined to declare a diagnosis of kidney disease if much albumen is escaping with the urine. Now let us observe what happens when the excreting cells of the kidneys are diseased. They lose their selective action just mentioned and are dependent on the internal pressure of the blood to keep up the elimination of the body waste products. Having lost their functional ability of selective elimination, these cells eliminate only that which is forced through most easily by the internal pressure, which means that some of the protein in the form of albumen may escape while some of the waste products is filtered back and retained in the body.

As we stated above, the liver cells have much to do in preparing the digested proteins in the form of amino acids for assimilation. The healthy liver cells serve as inspectors of amino acids, the building stones of the body tissues. We have shown how the liver cells inspect these building stones, passing the good stones along to the general circulation to be assimilated into body tissues, working over other stones into proper form and condition to be used and passing them on to the tissues, and, finally, converting the worthless fragments into urea and passing it on to the kidneys to be eliminated. Now, when the liver and kidneys are in a healthy state and are functioning well, these processes go along without a hitch; but when the liver is not normal, and is not functioning, these building stones are passed on into the general circulation in a useless condition and serve to clog the tissues with worthless material instead of serving as tissue builders. Through the processes of metabolism and catabolism, these useless products may be converted into uric acid and its several salts besides many other useless products of catabolism which may clog the tissues of the body, resulting in gout, neuritis and other constitutional disorders. Now, if the kidneys are in a healthy state and are functioning well, these waste products may be eliminated before any serious diseased condition results; but, if the kidneys are diseased, too, so that elimination is checked, then these diseases become exaggerated and chronic. This is the morbid condition of the entire body which is so often seen in people past middle life causing that syndrome of symptoms known as hyperpiesia, or essential hypertension, with its final end results of apoplexy, or dilated heart resulting in rupture in extreme cases.

Another kind of foreign protein which may be toxic to the human body is that which comes from infection. This may be either of three kinds. The infecting organism may produce toxic protein through its own metabolism, or a foreign protein toxic in character may result from the breaking up of the bodies of the infecting agent. The former of these is well exampled by the bacilli of diphtheria and of tetanus. These bacilli produce their specific soluble toxins (poisonous proteins) which produce the specific symptoms of these diseases. The latter has as examples such diseases as typhoid fever, cholera and the plague. The paroxysms of fever from malaria are believed to be caused not by the direct toxins of the protozoa, but by the foreign proteins resulting from the disintegrating corpuscles caused by the sporulating protozoa, which would represent the third class of protein poisoning from infecting organisms.

A class of protein products which may become disease producing when the liver and the kidneys are not functioning normally, is that resulting from tissue catabolism. When the normal catabolic processes are transpiring, the waste products of the broken down tissues are either remetabolized into useful body proteins, or they are changed into urea and discharged by the kidneys; but, when the liver is not functioning properly, these waste products may not be reconstructed into useful body proteins; and, when the kidneys are not eliminating normally, the urea may not be eliminated as it should be, and the waste products may, in this way, be retained to clog the tissues just as those proteins from the food may be retained to the injury of the body tissues.

Having discussed the several kinds of toxic and injurious proteins, it is well that we turn to those proteins which serve a beneficial purpose in the body economy. We have already mentioned those proteins which serve as food or body builders. Besides these there are three general classes of substances akin to proteins which are useful to the body. These are enzymes, endocrines and antitoxins. Each of these classes comprise several subclasses which it is useless to try to enumerate in this paper. Food proteins may be defined as body builders, while the enzymes are the food preparers. Endocrines are the body regulators and the antitoxins are the body defenders. It would require volumes to discuss these properly, for which reason we will leave them with this mere mention.

Treatment: The morbid conditions due to the several faults of proteins comprise a large percentage of all the diseases to which the human body is subject; and it is the object of this paper to classify these diseases so that we may adjust our treatment with more ease of thought. It will be observed that all morbid conditions due to proteins are caused by one of three conditions, viz.: by excess of proteins, by deficient proteins, or by toxic proteins. The treatment resolves itself into preventive, eliminative, substituting, neutralizing and symptomatic.

As food is the greatest source of body proteins, let us discuss food regulation to prevent disease. In studying the various foods, we find that there is not one which serves as a perfect food throughout a long life. Milk approaches nearest to the perfect food, but it is perfect only during the early months of childhood. The casein of milk, the edestin of hempseed, or the white of eggs furnish all of the necessary proteins so far as we know; but a person left to subsist on either of these does not develop all of the qualities of health and strength that he does when given a more varied diet. Gliadin of wheat seems to maintain an adult but does not produce growth. Gliadin is deficient in the amino acid lysin. If zein, the principal protein of corn, be the sole food protein, the health fails at once. Zein is deficient in several of the amino acids, three of which are lysin, tryptophan and glycocoll. It has been the custom of man throughout many centuries to eat a varied diet, usually from taste and desire; and it is only recently that medical science has determined the true causes of diseases due to deficient diet. So, in protein diseases, one of the first thoughts is adjustment of diet. If the disease be due to deficiency of the required proteins, these should be supplied. However, where there are toxic conditions from excess of proteins in the body, as in gout, the protein content of the food should be reduced. Where there is disease of the liver and kidneys, causing a general clogging of the tissues from retained fragments of proteins, these proteins should be reduced to the minimum in the food supply, and the kidneys should be stimulated to eliminate that which has already accumulated in the body; while, if the retained protein is producing symptoms of acidosis, some neutralizing drug should be given to neutralize the acid. This may apply to such cases as essential hypertention and those allied conditions.

In such diseases as urticaria, hay fever, spas-

modic croup and bronchial asthma, the cause should be sought, both as to sensitizing agent and the diseased mucous membranes which permit the absorption of the sensitizing proteins, and these conditions should be treated. Diseased tonsils should be removed. Nasal polyps should be removed and their diseased bases treated. Ulcers and inflammations of the nose and throat should be sought out and treated. Diseases of the alimentary tract should be investigated and treated. The appendix and gall-bladder should be carefully examined. The cure of these points of entry may make a wonderful change in the frequency of the attacks of these diseases. Certainly, we must not forget the processes of desensitizing; but, when we think of the numerous sensitizing proteins, it becomes an extended task which is liable to result in the loss of a patient and a doctor's reputation before we reach the causative agent in a given case. It is well here to mention the fact that practically all toxic proteins are acid; and the use of mild alkaline gargles and nasal douches may help to prevent the entry of sensitizing proteins; but such remedies must be mild else they may damage the mucous membrane and produce the condition which we are trying to prevent. Where an alkali can reach the sensitizing protein, it should alleviate the symptoms to some extent by neutralizing the toxic protein.

It is useless to try to enumerate here all of the means of prevention of the acute infectious diseases, which are essentially all diseases from protein poisoning: some by producing toxins as a product of their existence, some by forming toxic proteins from breaking up their own bodies, and some by producing toxic proteins of the body tissues which they destroy. For these we have our disinfectants, our vaccines, our bacterins and our antitoxins; and, when the body becomes too much clogged with these toxic proteins, we have access to our neutralizing agents and our eliminants. With these diseases, too, we have to give attention to the points of entry and use whatever means we are able to devise to remove these and prevent further invasion of the body.

Finally, we must resort to our symptomatic treatment; and it is to be regretted that modern medicine continues too much in this class. This includes the host of remedies for which we write our prescriptions which keep us on the best of terms with our local druggists. Certainly, we must not overlook our cathartics, diuretics, antipyretics, sedatives, anodynes, soporifics and a host of others; but we must not forget that these are only symptomatic remedies. Modern medicine provides many means of diagnosis which our predecessors did not possess; treatment is more specific than it was formerly; and we should attempt to use the specific remedies which are at our disposal. This is a day of fewer drugs with the use of specific remedies in more cases.

Now, that we have tried to cover in a general way a subject that would require a library in itself to discuss fully, we hope that we have brought out some thoughts in this condensed discussion of a broad subject that you may consider worthwhile and that you may carry home with you to help to direct your thoughts in your further study of this important subject. If we have added one thought to your store of medical knowledge we will consider our efforts worth while.

BIBLIOGRAPHY

Colloids in Biology and Medicine, by Bechold, translated by Bullowa.

Chemistry of Metabolism, by Von Furth, translated by Smith.

Pathological Physiology of Internal Medicine by Hewlett.

The Relation of Intestinal Toxemia to Allergy, by Allan Eustis, Southern Medical Journal, pp. 308-309, vol. XXIII.

Principles of Medical Pathology by Roger.

Infection, Immunity and Specific Therapy by Kolmer.

Practical Dietetics by Thompson.

Reference Book of Medical Sciences.

RADIOTHERAPY IN THE TREATMENT OF UTERINE FIBROMYOMAS.*

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The etiology of fibromyomas of the uterus is obscure. They are found more frequently during middle life and very rarely occur before puberty or after the menopause. Some authors think that sterility is a cause of fibroids while others contend that fibromyomas produce sterility. In a series of 1,149 cases reported by Kelley and Cullen, more than 50% were in women who had never been pregnant. Mary Elizabeth Hanks, reporting 350 cases, states that 65% of the married women had given birth to from one to six children. Fibromyomas are more prevalent in the colored than in the white race, the ratio being approximately 4 to 1. Autopsy records at the Johns Hopkins Hospital showed that 33.7% of all negresses over the age of 20 had uterine fibromyomas while only 10% of the white females were affected by them.

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Fibroid rests laid down many years before they develop into palpabale tumors are mentioned by Ewing. Hyperpituitarism and hypothyroidism are mentioned as etiological factors by Polak.

Anatomically, uterine fibromyomas may be classified as the interstitial, submucous and subperitoneal. It is probable that all these tumors begin as interstitial growths and that as they enlarge they remain at the point of origin or in their growth inward or outward they become submucous or subperitoneal. They are frequently multiple and more than one of the above class may occur in the same uterus.

From the radiotherapeutic standpoint, uterine fibromyomas may be classified as follows:

(1) Small symptomless fibromyomas found on routine pelvic examinations.

(2) Fibromyomas complicated by active pelvic inflammatory disease.

(3) Tumors associated with much pain.

(4) Tumors complicated by malignancy of the body of the uterus.

(5) Tumors definitely interfering with the functions of the rectum or bladder.

(6) Fibromyomas associated with chronic lesions of the cervix demanding treatment.

(7) Those that occur in women under the age of forty.

(8) Those that develop after the age of forty.

It is true that the great majority of uterine fibroids in this country are removed surgically while many European gynecologists refer such patients for radiotherapy. Wood states that during the last seven years at St. Luke's Hospital 1,443 fibromyomas were removed surgically and only twenty such patients were referred from the surgical service for radiotherapy. The treatment of fibromyomas, when classified properly, is either observation, operation or radiation and the great divergence of therapeutic opinion may be due to a failure to classify them accurately.

If routine pelvic examination is made of all patients, many small, symptomless fibroids will be found. These demand no treatment but they should be kept under observation and proper treatment instituted if it should be indicated. Some of these tumors will be diagnosed at or near the menopausal period and frequently disappear without treatment.

Fibromyomas, complicated by active pelvic inflammatory disease producing fever and leukocytosis, should be treated surgically. Chronic pelvic inflammatory disease is not a contraindication to irradiation of a uterine fibroid.

The frequency of such inflammatory diseases complicating uterine fibroids has been overestimated. Wood states that laboratory records of the last 150 fibromyomas removed at St. Luke's Hospital show that only 41 of these were accompanied by chronic pelvic inflammatory disease of the adnexa and that none of them showed an acute inflammatory lesion.

Fibromyomas, associated with much pain, should be treated surgically since a painful tumor usually indicates that there is an acute inflammatory lesion present or that there is torsion of the pedicle of the tumor.

Tumors that are large and hard on account of the possibility that they may be sarcomatous should be removed surgically. Calcified or degenerating tumors should be removed surgically. Calcified tumors can easily be demonstrated by X-ray examination.

Fibromyomas known to be complicated by malignancy of the body of the uterus should be treated surgically. These cases are not often diagnosed clinically and are occasionally referred for irradiation but when the tumor does not respond to a few treatments, the radiologist should suspect a malignant complication and request a very careful examination to rule this out. However, the frequency of malignancy of the body of the uterus complicating fibroids is much less than the surgical mortality in the treatment of uncomplicated tumors. Therefore, it is evident that if all fibroids including those complicated by malignancy of the body of the uterus were treated by irradiation the mortality rate would be considerably less than that obtained by surgical treatment of all uncomplicated tumors.

Fibromyomas producing pressure symptoms interfering with the functions of the rectum or bladder should be treated surgically due to the fact that such conditions demand more prompt relief than can be expected from radiotherapy.

With the exceptions of the above classes of fibromyomas approximately all of them will respond satisfactorily to radiotherapy, so that it is necessary to evaluate the advantages of radium and X-ray as agents of choice in the treatment of such tumors. That they may be used jointly in some cases, each serving a special therapeutic purpose is unquestionably true.

Many gynecologists and surgeons have used

radium in the treatment of fibromyomas and have contributed much information concerning its value as a therapeutic agent. Kelly, Schmitz, the late John G. Clark, Howard Taylor, clinicians at the Huntington Hospital of Boston and of the Memorial Hospital of New York have given valuable information concerning the efficacy of radium.

Fibromyomas associated with lacerated, infected, hypertrophied or eroded cervices which may be considered potential malignancies should be treated with radium applied in the cervical canal and X-ray over the uterus and ovaries. This plan of treatment should be executed in the same way that a malignancy of the cervix is managed. Practically all gnyecologists and surgeons are referring malignancies of the cervix for radium treatment, but if this is supplemented by deep X-ray therapy there will be a greater number of cures obtained.

Considering our major classifications last, we have fibromyomas occurring in women under the age of 40 and those over the age of 40. Approximately 20% of the fibromyomas are diagnosed in women under the age of 40, and in considering the method of choice in their treatment many factors should be considered.

Subserous or fibroids involving so limited amount of the uterus that they can be removed by myomectomy or histeromyomectomy leaving the patient in such anatomical condition that a normal gestation may take place, should be treated surgically.

Multiple fibroids or those in which the surgical procedure would be removal of the uterus should be treated by radiotherapy, preferably the roentgen ray. It is possible to cause a regression of uterine fibroids by radiotherapy without producing an artificial menopause. This is accomplished by blocking the ovaries and treating only over the tumor area to obtain the direct effect that irradiation has on such tumors. That radium and X-ray have a direct effect upon such tumors is evidenced by their frequent disappearance under radiotherapy in women past the menopause and in those who have had the ovaries removed. All patients who have any general physical disease that render them hazardous surgical risks should be treated by radiotherapy regardless of age. If an artificial menopause is produced by radiotherapy in treating a patient of this age there will be no greater menopausal symptoms produced than would occur following hysterectomy, because it is conceded that the ovaries atrophy in a year or two after the removal of the uterus.

Approximately 80% of all uterine fibromyomas occur after the age of 40. Wood's series shows 77%. Neill, reviewing 650 cases treated at the Howard A. Kelley Hospital, states that 75% of all uterine fibroids are amenable to radiation regardless of whether they are subserous, interstitial, submucous, single or multiple. Since the great majority of all uterine fibroids responds satisfactorily to irradiation when treated to the point of an artificial menopause which is justified after the age of 40 the choice of radium or X-ray should be considered. The untrauterine application of radium at the time of a curettage is very easily done but it is doubtful if such procedure accomplishes the best results. The hard, highly penetrating gamma rays of radium are not indicated in an uncomplicated uterine fibroid. An irritating discharge frequently follows the application of radium in the uterus and there may be a stenosis of the cervix resulting in pyonutra. Burns of the intestines due to previous adhesions have been reported. The application of radium necessitates hospitalization and is more expensive to the patient.

The advantages of roentgen treatment are that the time of each treatment is short, the patient is ambulant and that there is usually no post irradiation sickness. Economically considered the expense to the patient both in time and fees charged are in favor of roentgen treatment. The routine plan of X-ray treatment of uterine fibroids after the age of 40 contemplates a gradual rather than a precipitate menopause and deep therapy is not necessary except in potential malignancies of the cervix. Routinely, the posterior aspect of the pelvis is treated at one sitting using 180 K.V. with ¼ mm. of copper and 2 mm. of aluminum as filters. The distance is 50 c.m. and an erythema dose is given. The anterior aspect is divided into two areas and the treatment repeated in four weeks. Usually two treatments are required to produce a menopause but in patients under the age of 40 additional treatments may be necessary.

It is known that the follicular tissue of the ovary is the most radiosensitive and that the primordial and interstitial tissues are not much affected by the dosage usually given in X-ray treatment of a uterine fibroid.

My experience has been that the menopausal symptoms following a gradual menopause produced by X-ray therapy of uterine fibroids is not characterized by any marked symptoms. In fact, they are no greater than those of a natural menopause.

Conclusions:

(1) The etiology of uterine fibromyomas remains theoretical. However, they are by far the most prevalent of all pelvic neoplasms.

(2) An accurate classification is the first essential necessary in determining how these tumors should be treated.

(3) Many fibromyomas are still treated surgically which could better be treated by radiotherapy without mortality and with less expense to the patient.

(4) Patients under the age of 40 where the alternative surgical treatment is removal of the uterus, should be treated by radiotherapy. In such cases the ovaries should be protected from irradiation and an effort made to cause a regression of the tumor without producing a menopause.

(5) Chronic inflammatory lesions of the pelvic adnexa do not constitute a contraindication to radiotherapy. Chronic lesions of the cervix which may be regarded as potential malignancies demand radium applied in the cervical canal supplemented by deep X-ray therapy externally.

(6) The great majority of the uterine fibromyomas occurring after the age of 40 should be treated by X-ray which produces satisfactory results in practically all cases.

REFERENCES.

1. Anspach, Brooke M.: Gynecology, ed. 2, 1924. Lippincott, Philadelphia.
2. Wood, Francis Carter: Roentgen Treatment of Uterine Fibromyomas, J. A. M. A., March 11, 1930.
3. Neill, William J.: Sou. Med. Journal, March, 1929. Treatment of Uterine Fibroids.
4. Hanks, Mary Elizabeth: Roentgen Therapy in Fibromyomata and Other Benign Gynecologic Cases: A Clinical Report of Twelve Years' Experience. Journal Radiology, May, 1929.

VENOMOUS SNAKES*

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Snakes may be classified so far as the fangs are concerned into the aglypha, or fangless snakes, which are of course nonpoisonous; the opisthoglypha, or snakes having fixed fangs far back in the roof of the mouth; the proteroglypha, or snakes having fixed fangs in the forepart of the roof of the mouth; and the viperine snakes, having long, curved, movable and erectile fangs in the forepart of the roof of the mouth.

The opisthoglypha are possessed of grooved but not canaliculated fangs which are so far back in the mouth as to make it difficult, or in some species impossible, for them to effectively bite an animal of size. Hence, for the most part, they may be classed as not dangerous to man; their fangs and their poison are used mostly for the purpose of benumbing and paralyzing their prey, thus being enabled to swallow it more easily. These snakes include about eighty genera, some of which are river snakes, some arboreal, some terrestrial, some of burrowing habits and some semi-aquatic.

They are found in all parts of the world except the northernmost sections. I know of but one member of this group that is found in Florida and that is the tantilla coronata. It is ten inches long, slender, the fangs are almost microscopic and hence, as a menace to man, may be entirely ignored. It has a black head with a black-bordered, yellowish collar. I merely mention it here to show that each division of fanged snakes is represented in Florida as well as a very large number of fangless or harmless snakes.

It may be interesting here to state that if one will but take the trouble to carefully dissect the salivary glands of a harmless snake, a slightly separated lobe of a yellowish cast will be discovered and it is this lobe still more distinctly differentiated in the poisonous snakes which becomes the poison gland—a fact of some interest to the student of evolution. The proteroglypha include some thirty-nine genera, ten genera of which are sea snakes and some twenty-nine genera terrestrial or burrowing snakes.

These snakes do not have long fangs but their poison is exceedingly deadly to man, quick in its action and centering its effects principally upon the nervous system.

The fangs of the proteroglypha are on the average not greatly larger than the fangs of the opisthoglypha but they are canaliculated instead of grooved. They are connected with poison glands secreting a far more virulent poison than that of the opisthoglypha, however, and in much greater quantity. The fangs, as has been stated, are rigidly attached to the forepart of the upper jaw and do not fold up as with the viperine class of snakes.

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The tail of the sea-snake is vertically compressed or paddle-shaped for the purpose of being used as a propeller. There is but one species found in the waters of the new world. This is the yellow-bellied sea-snake off the west coast of Southern Mexico, Central and Tropical South America. It reaches a length of only about three feet. It is scientifically known as hydrus platurus. I need not consider this reptile here as I wish to devote most of my space to snakes with which we should become familiar in the United States and more especially in our own section.

Of the twenty-nine genera of elapine snakes belonging to the family of proteroglypha, there are ten species of the genus naja or cobra found in Africa, Southern China, India, the Malay archipelago and the Philippines. This snake strikes viciously and chews from two to five seconds before letting go. At least one species of "sepedon," a closely allied genus, the "sepedon haemachates," spurts or sprays a fine jet or stream of venom a distance of six or eight feet and seems to get a very accurate aim and range for the victim's eyes which may result in blindness or even death.

This snake is the deadly "ringhals" of South Africa.

There are nineteen genera related more or less closely to the cobra but one genus alone belongs to the new world while Australia literally swarms with elapine serpents, the deadly snakes far exceeding the harmless upon this great island continent.

There are twenty-six known species of elaps in the new world; many of them in tropical South America and Central America, being of a size to be really dangerous to man.

There are but two species found in the United States, the elaps fulvius or "harlequin snake," also called "coral snake" of the gulf states and the elaps euryxanthus of the southwest, also called "coral snake" or "sonora coral snake."

The harlequin snake has a black snout, a yellow band across the head followed by a black ring. The southwestern species has a black snout, a yellow band across the head followed by a red ring.

This is a point that distinguishes the species. There are many harmless snakes mimicking these markings to a more or less superficial resemblance; but it is sufficient so far as these two United States species are concerned to remember only that the poison varieties have always a black snout while the beautiful little cemophora coccinea, or scarlet snake, of the southeastern United States has a red snout. Other marked differences of interest to the scientist would best be ignored by the amateur observer as likely to confuse by multiplicity of detail.

By far, the most numerous of all poisonous snakes in Florida is the coral snake, but as it is a burrowing snake in its habits, many people who have lived in Florida for years have never seen one.

Its coloring is so gorgeously brilliant as to make it appear as though painted with the most brilliant tints of red, black and orange rings, the rings of black and red being especially brilliant and broader than the orange colored rings which always border the black and separate it from the brilliant red. The rings extend around the body. The red rings are omitted below or beyond the vent, and only black and yellow rings occur and the yellow bands become broader for the whole length of the tail beyond the vent.

The fangs of the coral snake of the southeastern United States are short, as are the fangs of all species of the coral snake; the mouth opening capacity is small. The snake will not strike if not actually touched; its eye-sight, like that of all burrowing snakes, is poor. The poison, while very virulent, is small in quantity and, as it cannot make its fangs penetrate clothing of any great thickness, bites are very rare and a complete injection of its venom is still rarer. Hence, the snake may not be seriously considered but it is well to bear in mind that its venom is virulent and that a death from its bite is not only a possibility but actually has occurred. I have personally measured a specimen of elaps fulvius which measured slightly more than a yard in length.

The fourth important group of snakes is the viperine snakes which include about one hundred eleven species.

The viperine snakes have the most highly developed and peculiarly efficient specialized poison injecting apparatus of all the poisonous snakes. The fangs are much longer and more curved than those of the opisthoglypha or the proteroglypha measuring instead of a small fraction of an inch, as in most of the species belonging to the two series before mentioned, to as much as ⅞ of an inch in the great diamond-backed rattlesnake and 1⅜ inches in a large bushmaster.

The viperine snakes instead of the long horizontal maxillary bone characteristic of the pre-

ceding two series has a small, movable, vertical superior maxillary so hinged and connected with the large, highly-developed poison gland as to allow the fangs to be folded backward out of the way when not in use. When striking, the fangs are erected and thrown forward and, being perfectly canaliculated, afford a peculiarly efficient injecting apparatus for placing the venom deep into the tissues of the victim.

The viperine snakes are divided into two classes, the "true vipers," none of which are found in the new world, and the "pit vipers" which in some species or other are found in both the new and old world.

The true vipers have no head-pits. There are forty-three species in the old world. The pit-vipers are marked by a deep pit between the eye and nostril on each side of the head. The function of this pit is not yet known but that it performs a function of some importance can hardly be doubted as the pit is lined with a membranous skin, is connected with a secondary pit close to the eye and there is a large nerve connecting the pit with the brain suggesting at least that it may be a special sense organ.

The pit vipers include two general classes—those without rattles on the tail and those with rattles (the rattlesnakes). There are about sixty-eight species of pit-vipers.

The pit-vipers, not having rattles, are divided into two classes—those with symmetrical plates on top of the head, known as ancistrodon or moccasin genus, and those with small scales on top of the head, the lachesis genus.

The rattlesnakes are divided into two genera. Those having the top of the head covered with symmetrical plates comprise the genus "sistrurus" while those having small scales on top of the head are the members of the genus crotalus.

The terrible lachesis genus is not found in the United States but is common in southern Mexico, Central and Tropical South America, some of the islands of the Caribbean Sea and, too, a few smaller species in southeastern Asia.

The ancistrodon, or moccasin family, is represented in the old world in the highlands of India and eastern Siberia, China, Siam and Japan. The genus ancistrodon is represented in the United States by the water moccasin or cotton-mouth and the copperhead. In Mexico, the ancistrodon bilineatus, closely allied to our own water moccasin, is found.

The ancistrodon piscivorus, or water moccasin, is a very dangerous reptile and needs a careful description. This snake has been known to reach the length of six feet but a four-foot moccasin must be regarded as a large specimen. It is a dull, olive brown; in fact, very dark in color with wide, darker, nearly black transverse bands. It has an eliptical, cat-like pupil and there is only one row of subcaudal tail plates for the greater length of the tail, while the harmless snakes which most closely resemble it have a round pupil and two rows of under-tail plates.

The bands of darker color across the body of the water moccasin are much more distinct in the younger snakes and, indeed, they are not easily distinguished except upon close examination in the older specimens. The inside of the mouth is very white, hence the name cotton mouth. The range of the cotton mouth is from Massachusetts to Wisconsin, in the north; to the gulf states of the south; and it is also found in the great southwest. It is very rare in the northern limits of its range but very common in the south. The copperhead or "ancistrodon contortrix" has about the same range as the water moccasin but seems to love most a rocky southern slope running off toward lower land. It is seemingly found in Florida only in the northern part of the state. It is dangerous but to a much less degree than its cousin, the water moccasin.

The ground color is a pale, chestnut brown crossed by saddles of a darker reddish brown color which are narrower on the back but broader at the sides, giving, when looked down upon from directly above, a sort of dumb-bell or hour-glass appearance to these markings. The top of its head has a nearly uniform copper color, hence the name "copperhead." A large copperhead may reach three feet in length. There is but one row of subcaudal plates and the pupil is eliptical. I have never known of this snake to be found in Florida farther south than Orlando and it is not common even in the northern portion of the State.

Rattlesnakes are numerous in the new world but are not found at all in the old world or in Australia. So far, but one species has been found in South America. Several species are found in Mexico but the great habitat of the rattlesnake is the United States. The different species are most numerous in the south and particularly in the southwest, but individual specimens are probably more numerous in many parts of the north, particularly some sections of Massachusetts, Pennsylvania, New York and Michigan, than in most

parts of the south. No state in the Union is entirely free from rattlesnakes except, possibly the State of Maine, in which, it is said, no rattlesnake as yet has ever been found.

The timber rattlesnake or crotalus horridus is the common rattlesnake of the northeast and also of all the hill country of the southern states but it is found very rarely in Florida and only in a few counties of the extreme northern part of the state. I do not need to give a careful description of this snake as his rattle brands him as a dangerous enemy.

The crotalus adamanteus, or diamond-back rattler, is the largest by weight of any poisonous snake in the world. It is quite common in the southeastern part of the United States but is not found west of the Mississippi River. The southwestern diamond-back is a different species of snake and is found in two species, crotalus atrox and crotalus atrox ruber, the latter of which is also described as crotalus exsul.

Another small rattlesnake common in the southeastern states is the sistrurus miliarius, or ground rattlesnake, pygmy rattlesnake, or sand rattler. It is the smallest rattlesnake in existence and as it is common in Florida and has such small rattles that it cannot be heard more than a few feet away by even persons of the best hearing and not at all when the rattles are damp, this little snake requires a careful description.

The extreme length of this reptile is seldom twenty inches. The body is rather slender; the coloration is a steel-grey body line with a row of black blotches on the back between which are spaces of a brownish red tinge. Occasionally, a bright red band shows on the neck and a row of tiny red dots shows on the sides at the junction of side and belly. It is a strikingly beautiful little snake but its fangs are tiny, the volume of poison is small and while its bite is dangerous to a small child, it should seldom prove fatal if promptly treated.

It is often stated that a pit-viper cannot strike unless coiled for the spring. This is a dangerous error for the camera shows that the head of a rattlesnake describes a letter "S" curve when striking, the act of which is so rapid that the human eye cannot follow the movement, yet the snake, while preferring the coiled position because of the better outlook for alert defense, can and does strike when in any position in which he can gather himself to launch the fatal letter "S" stroke. It is also asserted that the cotton-mouth cannot bite while under the water. This is a dangerous error. The moccasin cannot, of course, under the handicap of water-pressure, strike the fierce blow that he is able to let drive in the air, yet he can and does bite while under water. Such ill-informed propaganda is dangerous and is apt to throw people off their guard when obliged to deal with these dangerous reptiles.

There are many factors which tend to reduce the severity of results from snake bites. Col. Crimmins very admirably sums up these factors as follows:

1. The snake missing his goal. The snake does not see well during the day or before shedding, and may miscalculate the distance and strike a glancing blow without injecting venom.
2. Diminution in amount of venom, due to (a) hibernation, (b) aestivation, (c) previous exhaustion of the venom in feeding, (d) captivity.
3. Bite being inflicted through clothing that retains some of the poison.
4. Movement of the victim at the time of strike, making imperfect bite.
5. Region bitten being very lean, having little tissue, as on the finger, toe or shin.
6. Region bitten being very fat, so that its circulation is poor.
7. Ejection of part of the venom before the snake strikes.
8. Age of the snake—very young or very old specimens produce little venom.

Col. Crimmins also gives the following notes and comments upon the physiological effect of the venom upon human tissues from the bite of the rattlesnake and the same effects are observable to a greater or less degree from the bite of the cotton-mouth or copperhead.

"The hemolytic action causes a destruction of the red and white blood cells and the proteolytic action the destruction of other tissues. The antibactericidal action favors the development of gangrene as a consequence of the bite.

SYMPTOMS OF SNAKE BITE

a. Profuse bleeding at bite due to the anticoagulative action of the venom.

b. A fiery pain due to the action of the venom on the nerves.

c. Rapid swelling due to infiltration of connective tissue by the passage of blood caused by a

venom hemorrhagin of the nature of a cytolysin, which causes destruction of the endothelial lining of the smaller blood-vessels near the site of the bite.

d. Neurotoxic symptoms, nausea and vomiting.

e. Rapid pulse, sometimes double the normal and followed by very low blood pressure.

f. Discoloration."

The treatment of North American snake bites other than the coral snake should be by the administration intramuscularly with the syringe or intravenously, if urgent, of 10 c.c. antivenin as soon as possible after the bite occurs. If the snake has secured a perfect injection of the venom a second, third and even fourth dose of the antivenin should be given. Antivenin is a specific but it must be remembered that a large dose of venom requires a large dose of antivenin and that there is a definite relationship between the weight of the victim and the volume of the venom which must be adequately met by the antivenin. Remember that a small child will require relatively a much larger dose of antivenin than an adult. The dose of antivenin should be given at intervals of two to four hours according to symptoms.

There is much difference of opinion as to what should be advised in the absence of a doctor and in the interval before antivenin is secured when it is not at hand.

Personally, I have seen much harm from the application of the classically advised ligature between bite and heart, yet I must admit that if the bite should be an intravenous bite, the judiciously applied ligature might save a life for it is not true that the only way in which the venom enters the blood is through the lymph system. This is plainly demonstrated by the cases in which death occurs in from ten to thirty minutes after the bite. However, a ligature too tightly applied and left on too long may cause a much more extensive gangrene than would have occurred had the ligature been properly applied or even omitted altogether. If antivenin is at hand, do not use the ligature. Potassium permanganate should not be injected. A weak solution is inefficient, and a solution strong enough to destroy the venom will cause a menacing slough which may result fatally.

Dr. do Amarol's contention that bleeding from incisions does not drain off the venom to any great extent is in a measure true and yet experiments which I have personally made upon animals by injections of the aspirated fluid from the bite of the rattle snake has resulted in the death of animals so injected with all the symptoms of rattle snake poisoning. For this reason I am inclined to believe that there is a place for aspiration and for Dr. Jackson's system of crucial incisions as described by him in all cases in which there has been delay in administering the antivenin.

My experience in the treatment of poisonous snake bites has been confined to the number of twelve bites from known poisonous snakes and about an equal number of bites from snakes of non-poisonous varieties, a number entirely too small to permit an assumption of authority so far as treatment is concerned.

It is safe to say that as many bites of harmless snakes are treated as are those of the poisonous snakes. For this reason I have emphasized the necessity of being able to recognize all venomous snakes of one's own locality at least.

Oftentimes, in a feeble or excitable individual, the psychological effect of the bite of a perfectly harmless snake may be alarming to patient and friends and the quiet assurance of the doctor will be much appreciated. The expense of the administration of antivenin may be spared also when one is sure of the bite being the bite of a harmless reptile. Lastly, if the bites of harmless snakes are to be treated indiscriminately with antivenin, a mass of unreliable statistics will be built up that will seem more favorable than facts would warrant.

It is for these reasons that I instruct all persons calling me to attend a person said to have been bitten by a poisonous snake to save the snake for me to examine and I often find that the snake suspected to be poisonous is, in fact, perfectly harmless.

Out of the last four calls to attend persons said to have been bitten by water moccasins, I found but one who had been really bitten by a moccasin. The three other bites proved to be by the tropidonotus fasciatus or common water snake; by the tropidonotus f. var. erythrogaster or copper-bellied water snake; and by the farancia abacura, the Florida red-bellied snake or so-called hoop snake. In all of these cases, I refrained from giving the antivenin and pointed out to the interested parties the most obvious differences between the moccasin and the harmless suspect.

In conclusion, may I not say that whiskey or any alcoholic liquors have no place in the treatment of snake bites and I believe that most of the

foundation for the widely prevalent faith in its efficacy is because of its success in the treatment of bites of harmless snakes and those bites of venomous snakes in which a perfect injection of the poison was not secured. The only possible good that could be derived from the use of alcoholics in snake bites would be for the psychic effect in overcoming the panic born of fear.

CONCLUSION

1. When antivenin is immediately available, no other treatment should be used.

2. Antivenin should be given in doses sufficient to get results; repeating once in 2 hours until condition of patient is satisfactory.

3. The younger the patient, the larger the dose should be.

4. Alcoholics are contraindicated.

5. Permanganate of potassium should not be used for injection; weak solutions are useless and strong solutions are detrimental.

6. In delayed cases, the crucial incisions and suction at the proximal swollen point is good practice; as is also the application of warm normal saline or saturated boric acid solution at location of the wound.

7. The identification of the biting snake should be always established if possible.

   a. To remove doubt as to its being a venomous species,

   b. To allay psychic depressions in case of a non-poisonous snake,

   c. To save unnecessary expense in such cases,

   d. To secure reliable statistics.

8. The use of the ligature around the limb when delay occurs in reaching the doctor or in securing antivenin is a questionable procedure as it may cause much more harm than good and is always a greater menace in causing gangrene; yet carefully applied and not too long it may save a life when blood vessels are injected by the reptile, for the poison is sometimes carried partly by the veins instead of by the slower absorption through the lymphatic system.

(Authors and others to whom I am indebted in preparing this paper are: Dr. Weir Mitchell, Dr. Raymond L. Ditmars, Dr. Afranio do Amaral, Col. M. L. Crimmins, U. S. A., D. A. Atkinson, M. Graham Netting, Dr. Dudley Jackson, Dr. Jno. S. McEwan, Dr. Gaston H. Edwards. The last two for valuable suggestions resulting in alterations in the paper as originally written.)

GUNSHOT WOUND OF THE TIBIA
REPORT OF A CASE*

Z. BRANTLEY, M.D.,
Grandin.

In writing a paper on any particular medical subject, it is customary to make brief reference to the literature pertaining thereto. But in this paper it is not my endeavor to put up a classic. I am merely trying to depict the practical side of a medical man's experience in a rural district practice. Furthermore, the literature at my command on this subject is scarce. However, it is a well-known fact that gunshot wounds of the bones in former years were more serious than at present, this probably being due to the more modern methods of treatment.

Back in the Russo-Japanese war, a large percentage of all bone wounds became infected and practically all wounds by Russian bullets suppurated. The majority of all lead and soft nose bullet wounds of long bones cause fractures and the same is true of small shot at close range.

The histology of the tibia is the same as that of all long bones. Such terms as periostium, osteoblasts, circumferential lamellae, and the Haversian system which is made up of lamellae, lacunae, canaliculi and Haversian canal, all meant very little to me when I first heard of them back in my freshman year at the Atlanta School of Medicine, but all these played an important part in the case which I am about to report to you.

The Haversian canal contains artery, vein and lymphatics. The marrow canal is lined by the endostium. The exterior of bone is composed of compact tissue, while the interior is made up of cancellous bone.

The tibia is the longest bone in the body excepting the femur. It is prismoid in form, expanded above where it enters into the knee joint and more slightly enlarged below where it enters into the ankle joint. It consists of a shaft and two extremities.

The nutrient artery supplies the red marrow of the extremities and the medulla of the entire shaft. It also supplies in part the cancellous tissue of the extremities. The extremities are also fed by the articular arteries. One or two large veins accompany the nutrient artery and many smaller ones return the blood. It will be remembered that veins of bones have no valves.

In the foregoing, you are reminded that the

*Read before the 11th Annual Meeting of the Florida Railway Surgeons' Association, Pensacola, May 5, 1930.

tibia has an abundant blood supply especially in the upper end, which will be of considerable interest in the following case report.

On the morning of June the 23rd, 1929, I was called to see a negro man, age 52, who had been shot by his wife, as the outcome of an all-night family brawl. The weapon used was a 12-gauge full choke bore single-barrel shotgun loaded with No. 6 shot, and at a distance of 20 feet. The entire charge took effect in the upper end of the shaft of the tibia of the left leg near the juncture of the shaft with the head and on the internal surface between the attachments of the ligamentum patellae and the sartoris muscle. This part of the bone is covered by an aponeurosis derived from the tendon of the sartoris and by the gracilis and semitendinosis.

By some peculiar means, the skin had almost closed this wound, making it look something like a crescent-shaped cut. But the hole in the bone was circular in form and about the size of a dime. There was very little evidence of blood and the man seemed fairly comfortable. However, he was pretty well loaded with mean-smelling shine.

On examination, I found that the bone was not broken, but there was some tenderness around the knee and calf. After satisfying myself that this injury was sustained in the manner stated above, I decided to clean out this wound and ascertain just what damage had been done. The patient's bed was used as an operating table. The instruments used were among those carried in my emergency kit and consisted of a small bone curette, a probe and a large scalpel. A small bulb syringe with a glass barrel and a tourniquet were also used in connection with the operation, the tourniquet being applied just above the knee joint.

The patient was anesthetized by my son, who is a second-year pre-medical student.

Following the laws of asepsis and antiseptics as best I could under the circumstances, I proceeded to clean out the wound cavity. It was discovered, that as soon as the charge had penetrated through the compact layer of bone, it assumed a downward course. Therefore, a V-shaped notch was cut in the bone in the lower margin of the wound, care being taken to preserve the periostium as best I could.

Through this opening, the bone wound was cleaned out, the contents consisting of shot, wadding, shreds of clothing, shattered bone substance and clotted blood.

After the cavity was thoroughly curetted, it reminded me of a wood pecker's nest in an old dead tree. It extended inward for about three-fourths of an inch and downward for about three inches from the upper and outer margin, and had a fluid capacity of one-half ounce. This wound was flushed several times with a one per cent chloramine T solution and sponged out, then the tourniquet was loosened, and rather to my surprise, the cavity instantly filled with blood.

The tourniquet was again applied and the blood sponged out and the wound loosely packed with gauze dipped in the chloramine T solution. On loosening the tourniquet this time, it was noted that blood ran through this packing freely. The wound was packed again, but very tightly this time, and a gauze compress bandaged over the entrance.

A tendency toward severe hemorrhage kept up for about 36 hours, then it gradually subsided and at the end of the fourth day it seemed that healthy granulations were fast forming.

As soon as the operation was finished, a 1,500 unit dose of tetanus antitoxin was given and a blood specimen taken for a Wassermann test, the result of which was reported positive plus 4.

The after treatment consisted in daily dressings of flushing the cavity with chloramine T solution and packing with gauze dipped in same. And there were three intravenous doses of neo-arsphenamine, 0.6 grams each, given at weekly intervals. This probably did not rid his system of the old syphilitic infection, but very likely hastened the healing of the wound.

The rapidity with which this wound healed was beyond my expectations. Never was there a drop of pus noted, and the patient was discharged as well on July 28, 1929, just five weeks from date of being shot.

I called this negro to my office on April 27, 1930, for observation, a little over 10 months after being shot, and found that he was apparently in perfect health and there was no deformity of the tibia. Except for a slight depression, with a grayish scar, at the sight of entrance of the wound, about the size of a buffalo nickel, there was no evidence of this bone ever having been injured.

This man informed me that he is now chipping 10,000 turpentine boxes each week, which necessitates his walking several miles daily.

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BLOOD PRESSURE

The question of blood pressure has been agitated so frequently that one is apt to feel that undue prominence is given this symptom; however, both the American Medical Journal and the Southern Medical Journal have carried in recent numbers, editorials, based largely upon the findings of Alvarez and Stanley[1] in a study of 6,400 prisoners and guards. These findings agree so thoroughly with data obtained in examining more than 4,000 men of an average age of 39 years at the Veterans' Hospital, Lake City, that we can quite easily concur in the conclusions reached.

Another reason for reviewing the discussion is, that quite frequently patients with pressures between 100 mm. and 110 mm. state that they have been warned by their physicians that their pressure is extremely low for their age.

Alvarez and Stanley object to the old idea that a rising blood pressure is normal with advancing

years and place the limits of normal in adults between 90 mm. and 140 mm.

They further state that the arterial tension is not raised by dissipation, drugs nor syphilis. It is influenced by heredity, excitement, the day's work, body fat and temperature of the environment; but the most vital point in the study is, that if one has hypertension at 50, he probably had it at 20 years of age, and that 140 mm. is just as abnormal for one at 50 as it is at 20.

[1]Alvarez, W. C., and Stanley, L. L.: Blood Pressure in Six Thousand Prisoners and Four Hundred Guards. A Statistical Analysis, Arch. Int. Med., 46:17, (July) 1920.

MALARIA

Most people feel that they know all there is to be known about malaria and are inclined to regard the matter in the same vein as the Florida darky who was seen at a railroad station while having a chill. When asked if he was sick he replied, "No, sah, I isn't sick, I'se just chillin'." It is this attitude which to a large extent is responsible for the present prevalence of malaria.

In the 1929 report of the United Fruit Company, Dr. Deeks says "malaria still must be considered as the disease of outstanding economic importance in the tropics." The southern extremity of Florida lies just one-half degree north of the Tropic of Cancer and what is said of the tropics applies. Deeks further says that "due to improved camp sanitation and anti-malaria activities, there has been less sickness and the earning capacity of man has been increased. The average earning capacity per man per month resulting from the measures indicated are given as follows: 1927, $30.79; 1928, $38,61; 1929, $40.80.

This is in a country where the rate of pay as a rule is lower for common labor than in the United States. At first labor was inclined to show an antagonism but this was gradually changed to a quizzical attitude and then to one of grateful contentment which led to recognition of the benefit of the sanitary measures."

According to Dr. Henry Hanson, State Health Officer, what has been said applies to the rural section of Florida and a campaign for the control and reduction of the malaria incidence in the state should have the whole-hearted support of the medical profession. Doctors will benefit from the improved health conditions among the farmers as it will bring about greater production due to increased earning capacity.

THE LOUISVILLE MEETING OF THE SOUTHERN MEDICAL ASSOCIATION

One of the best meetings in the history of the Southern Medical Association was in Louisville, Kentucky, in 1920. Now, after a lapse of ten years, the Jefferson County Medical Society, Louisville, is again host to the Southern Medical Association. Louisville is said to be "at the Crossroads of the Nation," accessible to, and easily reached from, all points in the South as well as in the Eastern, Central and Western states. Louisville is a great medical center, having early in the Nation's history taken its place as a seat of medical learning. There have gone out to the South from the medical schools of Louisville, now all merged into the School of Medicine, University of Louisville, perhaps more graduates than from any other medical center.

The program arrangement of the last several previous meetings, which has proved satisfactory to all, will be followed again this year. Tuesday and Wednesday, November 11 and 12, will be general clinical days, the program the first day being made up by members of the Louisville profession and the second day by physicians from outside the host city.

The opening clinics have been particularly well planned by physicians with the best facilities, to bring out the newer methods of diagnosis and therapy. Guests who arrive in time for the first of the Louisville clinics will feel amply repaid for their effort. For the clinics of the second day, the speakers will be brought together from the entire Southern territory, and from more Northern and Western points as well. The strictly clinical plan of presentation of patients and analysis of symptoms will be followed as far as possible. The wealth of clinical material in and near Louisville will furnish a varied background, for elucidation of the essayists' ideas and methods.

The scientific exhibits from year to year have shown increasing variety and merit. The technical exhibits this year are exceedingly full and varied. Careful inspection of their materials will show how faithfully and how quickly the supply houses respond to changing needs of the medical profession, and how frequently they may be leaders in improvement of technical methods.

The formal opening session with the addresses of welcome and response, featuring the address of the President, Dr. Hugh S. Cumming, Surgeon General, U. S. Public Health Service, will be held on Tuesday evening. The last general session

will be on Thursday evening, featuring the Oration on Surgery and Oration on Medicine, both presented by men of national reputation.

Wednesday evening has been set aside for alumni reunion dinners. Dinners will be arranged for all the schools having a sufficient number present to justify an individual dinner. The University of Louisville will make this a "home-coming" occasion, and expects to have hundreds of former Louisville graduates at its reunion and dinner.

The eighteen sections and conjoint meetings will hold their sessions on Thursday and Friday, meeting as usual in half-day sessions. The National Malaria Committee and the Southern Association of Anesthetists will meet conjointly with the Southern Medical Association as has been their usual custom, both presenting strong programs. The general session programs and the section programs are unusually strong this year. The section programs reflect the interests, inclinations, and educational needs of their officers, men in active practice throughout the Southern territory. From a scientific point of view, the Louisville meeting will be another outstanding success in the already illustrious history of the Association.

While the Southern Medical Association is strictly a scientific organization and its annual meetings are to stress things scientific, the social features are not omitted. There will be a President's reception and grand ball with Armistice Day setting on Tuesday evening, following the President's reception. There will be other social functions, with special entertainment for the visiting ladies. Louisville has one of the most active local Women's Auxiliaries in the United States, and its members plan to give the visiting ladies a royal good time. Mrs. George A. Hendon is General Chairman for Ladies' Entertainment and Mrs. John K. Freeman is President of the local Auxiliary.

There will be the usual golf tournaments for men and for the ladies and also the trap shooting tournament, there being permanent trophies to be contested for by both these groups.

Reduced round trip railroad rates are in effect from all points in the South as well as from Eastern, Central and Western states. Louisville is a railroad center reached by through sleepers from all parts of the country.

Louisville has modern hotels and all who wish to attend will be comfortably housed.

STATE NEWS ITEMS

Announcement has just been made of the marriage of Miss Maude Goode Coney of Jacksonville to Dr. Harold D. Van Schaick of Jacksonville. The ceremony took place at 5 o'clock, Wednesday afternoon, September 10th, at Atlantic Beach. The Rev. C. A. Ashby, rector of the Church of the Good Shepherd, performed the ceremony, after which an informal wedding supper was served. Later, Dr. and Mrs. Van Schaick left for an extended wedding trip in the North. They will make their home in the apartments at Stockton and Park Streets, Jacksonville.

* * *

Dr. Hugh West of DeLand was a visitor at the Seminole County Medical Society meeting, September 12th. Dr. West gave a very interesting talk on spinal anesthesia as given at the Mayo Clinic.

* * *

Dr. and Mrs. M. A. Lischkoff of Pensacola are enjoying several weeks' vacation in and around New York. Dr. Lischkoff will remain to attend the meeting of the American College of Surgeons in Philadelphia before returning home.

* * *

Dr. Prescott LeBreton, a member of the Volusia County Medical Society, who has been spending some time in Buffalo, N. Y., is now in St. Petersburg doing orthopedic surgery. Dr. LeBreton's office will be in the American Legion Hospital for Crippled Children where he will hold state clinics.

* * *

Dr. L. M. Anderson of Lake City, while on a trip north, stopped off in Washington, D. C., and personally talked for Florida in connection with the branch of the National Soldiers' Home. Dr. Anderson was cordially received at headquarters and feels encouraged at the prospects for Florida.

* * *

Dr. J. C. Davis of Quincy, President of the Florida Medical Association, returned recently from a vacation spent in the mountains of North Carolina.

* * *

Your wife will be interested in the Woman's Auxiliary page. Be sure to call her attention to page 187 of this issue.

Dr. M. M. Andrews of Orlando has moved his offices to the Orange Clinic, on Lucerne Circle.

* * *

Dr. Ralph E. Stevens of Sanford was recently appointed as physician of the U. S. Veterans' Bureau with headquarters in Jacksonville. Major Stevens is commanding officer of the Medical Corps, 124th Infantry, Florida National Guard.

* * *

Dr. Sylvan McElroy has resumed his duties as health officer of Orlando after spending a month on the coast where he enjoyed a delightful vacation fishing.

* * *

The Executive Committee of the Florida Medical Association has designated May 12th and 13th, 1931, as the meeting dates for the Fifty-Eighth Annual Convention of the Florida Medical Association at Orlando.

* * *

Attending the Thirty-first Annual Meeting of the American Roentgen Ray Society in West Baden, September 22-26, from Florida were: Dr. W. McL. Shaw, Jacksonville; Dr. Bundy Allen, Tampa; Dr. Brown Farrior, Tampa; and Dr. Gerard Raap, Miami.

* * *

Dr. C. J. Marshall has opened offices in the Exchange Building, Orlando.

* * *

Dr. and Mrs. Ferdinand Richards and Dr. and Mrs. E. C. Swift of Jacksonville enjoyed a visit and fishing trip at Port St. Joe recently.

* * *

Dr. Nonie Wilson Gable of St. Petersburg recently changed office location and Dr. Gable's present address is Health Department, 175 Fifth Street, North.

* * *

Dr. and Mrs. I. F. Bean of Melbourne made a trip recently to Baltimore, Winchester, Va., and Tate Springs, Tenn.

* * *

Dr. and Mrs. Joseph H. Lucinian of Miami announce the birth of a son on September 16, 1930, at Victoria Hospital.

* * *

Dr. Raymond Sanderson of Jacksonville has recently returned from Brooks Field, San Antonio, Texas, where he has been for the last month attending the flight surgeons' training school, bringing with him his diploma testifying that he has finished the course. Dr. Sanderson now has the rank of lieutenant-colonel in the United States Army Reserve.

* * *

Dr. G. E. Osgood has returned to St. Petersburg after a year's illness in Washington, D. C.

* * *

Dr. and Mrs. J. N. Tolar of Sanford have just returned from a vacation spent in Maine and other points North. Their son, Ralph, will return later.

* * *

Dr. W. M. Rowlett of Tampa has returned after spending six weeks attending clinics in Boston and New York.

* * *

Dr. J. R. Chappell of Orlando is making quite an extended trip in the North. He planned to witness some interesting baseball games during the World Series.

* * *

Dr. and Mrs. George M. Mitchell of Jacksonville returned recently from quite an extended trip, including New York City.

* * *

Dr. H. B. Fisk of St. Petersburg has entered the Veterans' Bureau Service and will report for duty at New Orleans at once.

* * *

Dr. C. C. Webb of Pensacola recently attended clinics in Baltimore and New York City. Dr. Webb also visited his former home in Columbus, Ohio, before returning to Pensacola.

* * *

Dr. and Mrs. George W. Wood of Rockledge spent their vacation at Miami Beach recently.

* * *

Dr. and Mrs. H. Quillian Jones of Ft. Myers announce the birth of an 8¼ pound girl, Dorothy Louise Jones, on September 24, 1930.

* * *

Dr. William P. Stull of Jacksonville was recently appointed to the medical staff of the Duval County Hospital.

* * *

The Hillsboro County Medical Society is cooperating with the Y. W. C. A. in Tampa by arranging lectures through the winter season. Dr. Harry Evans of Tampa delivered the first lecture.

Dr. Grady H. Brantley of Lake Worth has returned from a short sojourn at Indian Springs, Georgia.

* * *

Dr. Ernest Milam, president of the Jacksonville Kiwanis Club, represented his club at the annual district convention in Orlando, recently.

* * *

Dr. George A. Dame and Dr. Leland H. Dame of Inverness have recently made many improvements in their clinic located in the large residence building at the corner of Main and Seminole Streets. Dr. Leland Dame recently completed several weeks of post-graduate work in diseases and operations of the eye, ear, nose and throat and Dr. George Dame also completed post-graduate work in diseases of children and babies.

* * *

Dr. A. W. Knox of Sanford recently made an extended trip through Canada.

* * *

Dr. and Mrs. A. K. Wilson of Jacksonville recently visited in North Carolina.

* * *

Dr. A. M. Bidwell of Tampa spent two weeks recently visiting surgical clinics in Baltimore and New York City.

* * *

Dr. Paul H. Martin of Jacksonville recently visited in Savannah, Georgia.

* * *

Dr. C. J. Heinberg of Pensacola attended the American Academy of Ophthalmology and Otolaryngology in Chicago recently.

* * *

Dr. and Mrs. Herrman Harris of Jacksonville returned recently by motor from Poughkeepsie, New York, after an interesting trip.

* * *

Dr. Frank Gray and family have returned to their home in Orlando after spending a month at Daytona Beach.

* * *

Dr. R. E. Stevens, formerly of Sanford, recently returned from a trip to Philadelphia, New York City, Wilkes-Barre, Pa., and other points of interest.

Dr. and Mrs. Jerome Knauer of Jacksonville have returned home after a three weeks' visit to New York and Long Island.

* * *

Dr. and Mrs. Louis Orr of Orlando are spending the month of October touring Old Mexico.

* * *

Dr. H. F. Watt of Ocala recently made a trip to Jacksonville by motor.

* * *

Dr. and Mrs. Russell H. Dean of Jacksonville have returned home after an extended trip to Baltimore through the Shenandoah Valley. They also visited in Waynesville, N. C., en route.

HENRY K. DuBOIS

Dr. Henry K. DuBois of Port Orange died September 9th at his home. Dr. DuBois was one of the four doctors elected to honorary membership at the Pensacola meeting of the Florida Medical Association.

SAMUEL GAINES WORLEY

The death of Doctor Samuel Gaines Worley of St. Augustine, Florida, September 8, 1930, removes one of the older physicians of the state from the roll of membership of the Florida Medical Association. Dr. Worley was born in Tennessee January 18th, 1856. His early studies were obtained in the rural schools of the districts in which he lived. His medical education consisted in studies at Tulane University, New Orleans, Louisiana, and the Atlanta Medical College, Atlanta, Georgia. He graduated at the latter college in 1882. He practiced his profession in Louisiana, Tennessee, West Virginia, Georgia, Texas and Florida. He located in Florida at Kissimmee in 1883 where he lived seven years. In 1890 he located at St. Augustine where he was employed by the Florida East Coast Railway. Here he organized a hospital and training school for nurses as chief surgeon for Florida East Coast Railway which position he held until 1914 when he organized a private hospital at St. Augustine. He operated this hospital until 1923 when he retired from active practice.

He was quiet, gentle and kind. The Florida Medical Association feels the loss of Doctor Worley and prints this memorial to his memory.

A copy of the following letter has been received in the editorial office. It so aptly expresses the Editor's feelings that it is deemed worthy of publication:

"The Editor,
Jacksonville Journal,
Jacksonville, Fla.

DEAR SIR:

In recent issues of your valuable journal you have carried in prominent parts, notices of the arrest and conviction of a Jacksonville physician, in the courts of Georgia for criminal offense. The name of this party as given in your paper, is Dr. Grenoble. This is not the first time that your paper has given wide publicity to criminal acts of alleged physicians.

To do justice to the medical profession I should think you would at least ascertain that the party in question is a member of the medical profession. After a thorough search through the latest registrar of practitioners of medicine in Florida and in the directory of the American Medical Association, there is no physician registered by the name of Dr. Grenoble.

Furthermore, I would call your attention, that according to the interpretation of the modern dictionary the use of the word doctor, or physician means one who is practicing medicine. Despite that fact, practitioners of various types of healing, with little or no educational attainments, call themselves doctors or physicians."

MEETING OF THE FLORIDA EAST COAST MEDICAL ASSOCIATION

The fourth meeting of the Florida East Coast Medical Association was held at Melbourne on October 2nd and 3rd, with Dr. Roy J. Holmes, of Miami, presiding, and Dr. I. M. Hay, of Melbourne, as secretary. The meeting was well attended, seventy doctors registering.

The scientific program was an excellent one and a more than usual interest was shown in the reception of the papers read, by those attending.

Dr. Hay and the members of Brevard County Medical Society are to be congratulated upon the success of the meeting, and upon the class of entertainment furnished the attending doctors and their wives. In passing, thanks should be rendered Mr. Fielding, the proprietor of the Hotel Melbourne, and Drs. George J. Kappler, of West Palm Beach, and John D. Milton, of Miami, for the musical program furnished during the banquet. The vocal cords of both doctors are in strong condition, and if their voices at times were rather discordant, it may be attributed to slight colds contracted by these gentlemen during their frequent visits to the entertainment room on the second floor of the hotel.

The ladies were entertained by the wives of the local physicians, and from all reports available, claim to have had an excellent time.

Dr. Calvin D. Christ, of Orlando, appeared to be having a very delightful time, especially out at the Country Club at the dance. Several of the ladies said he was as light on his feet as if he weighed one hundred pounds, and was twenty years of age. When told that, Dr. Christ said that was just about as old as he felt.

Dr. J. Ralston Wells, of Daytona Beach, was elected president for the coming year; Dr. I. M. Hay, of Melbourne, first vice-president; Dr. Edward Jelks, of Jacksonville, second vice-president, and Dr. Edwin C. Swift, of Jacksonville, secretary. Jacksonville was selected as the next meeting place.

In order to stimulate attendance until the end of each meeting, it was voted to assess each member registering at future meetings, fifty cents in addition to the registration fees, which hereafter will not exceed two and one-half dollars, and that this shall be held as a "pot," to be drawn for toward the end of the meetings. Each one registering will be given a card with a number, and a duplicate number will be placed in a hat at the time of the drawing. The first number drawn will receive two-thirds of the amount of the "pot," and the second number, the remaining third. If the numbers drawn are held by members who have left prior to the drawing, they will receive nothing, and a second number, or numbers, will be drawn. In order to win, one must be present when the numbers are selected. Assuming that one hundred and fifty are present at the Jacksonville meeting, it is readily seen that the winning numbers will warrant the boys in remaining until the end of the session.

FIFTY-EIGHTH ANNUAL MEETING OF THE FLORIDA MEDICAL ASSOCIATION, ORLANDO, MAY 12, 13, 1931.

THE WOMAN'S AUXILIARY PAGE

WOMAN'S AUXILIARY
TO THE
FLORIDA MEDICAL ASSOCIATION, INC.

State Editor
MRS. EDWARD JELKS,
2244 St. Johns Avenue
Jacksonville

OFFICERS

MRS. J. RALSTON WELLS, President . . . . . *Daytona Beach*
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MRS. J. E. TAYLOR, Secy.-Treas. . . . . *DeLand*

September brought the return of most of the summer vacationists; October finds them settled down to their regular routine; and also busily engaged in outlining plans of work for the coming year. To this end, Mrs. Wells, State President, called a meeting of the Executive Board at Melbourne, October 2-3; at which time the Florida East Coast Medical Society met in that place. Mrs. Wells is, this month, sending out the following circular letter to all county Auxiliary presidents:

"With the coming month, our organization, by its component groups, enters upon its period of active work. I hope I may have your active cooperation in making this a successful year.

Since I assumed office in May at the close of our business year, the past summer months have been used, necessarily, to familiarize myself with the work and to plan for the future. However, I must call attention to an outstanding feature, which was inaugurated immediately after the Pensacola convention—a woman's Auxiliary Page in the Florida Medical Journal. If you have not already discovered it, let me urge you to look for it each month, and to search in your files for the past numbers. It is the aim of the Editor, Mrs. Edward Jelks, to publish something of interest along Auxiliary lines each month, and again I ask your cooperation by sending in items of interest from your Auxiliary.

Attendance at the convention of the Woman's Auxiliary to the American Medical Association at Detroit in June was a source of great inspiration to me. I cannot urge too strongly that you and your members make every effort to attend a national convention. An immediate opportunity presents itself in the convention of the Auxiliary to the Southern Medical Association which meets in Louisville, November 11-14. The State is entitled to two delegates and two alternates and as many visitors as care to go. The delegates and alternates will be appointed at a meeting of the Executive Board to be held in Melbourne, October 2-3. Any suggested names of members who might attend will be welcome.

There is such urgent need for increased membership in our organization that I wish I might have a pledge from each Auxiliary to organize one new Auxiliary in some nearby county which has not been interested so far. You may count on my presence and assistance where possible.

Please send in to the State Secretary-Treasurer, Mrs. J. E. Taylor, DeLand, a correct list of your Auxiliary officers, that we may keep our records up-to-date.

I shall hope to hear from you from time to time about your work and shall welcome suggestions. If I can be of help to you at any time, in any way, I am at your service.

With best wishes for a successful Auxiliary year, I am Very sincerely yours,

MRS J. RALSTON WELLS.

* * *

HYGEIA.

On September 5, Mrs. Herrman Harris, State Chairman of Hygeia, sent out her first bulletin to the Presidents and Hygeia Chairmen of the County Auxiliaries. Her program for 1930-1931 is as follows: To put the magazine, "Hygeia", wherever it may do the most good; for example, schools, libraries, clubs, public reading places. The means by which this may be accomplished is left to the discretion of each individual Auxiliary, but she suggests that the subscription be donated by the Auxiliary or their Medical society or by individuals, by benefits, or by the Board of Education in the case of schools.

As a new feature this year, Mrs. Harris is requesting each Auxiliary to have at least one health program during the year. If possible to have more than one such talk, so much the better.

Finally, she urges each Hygeia Chairman to outline her work early, formulate her program for the ensuing year, and to pursue her work with lots of enthusiasm.

COUNTY SOCIETY	SECRETARY	MEETINGS				Dues Paid.
		Date	Time	Place	Luncheon?	
Alachua	J. E. Maines, Jr., M.D., Gainesville.	2nd Tuesday	12:00 Noon	White House	Yes.	88%
Bay	Don S. Fraser, M.D., Panama City.					50%
Brevard	I. K. Hicks, M.D., Melbourne.	3rd Tuesday		Varies		91%
Broward	Ralph Lingeman, M.D., Ft. Lauderdale.	2nd Tuesday	8:00 P.M.	Chamber of Commerce	No.	86%
Columbia.....	T. H. Bates, M.D., Lake City.	1st Monday.	7:30 P.M.	Blanche Hotel		73%
Dade	E. N. McKenzie, M.D., Miami.	1st Friday	8:30 P.M.	Club Room, Huntington Bldg.	Occasionally.	86%
DeSoto-Hardee-Highlands ...	H. V. Weems, M.D., Sebring.		8:00 P.M.	Varies	Yes.	93%
Duval	Kenneth A. Morris, M.D., Jacksonville.	1st Tuesday	8:15 P.M.	Chamber of Commerce Building	No.	84%
Escambia	J. M. Hoffman, M.D., Pensacola.	1st Tuesday	8:00 P.M.	Board of Health Building	No.	89%
Hamilton	J. R. Bruce, M.D., Jasper.					100%
Hillsboro	J. T. Cowart, M.D., Tampa.	1st and 3rd Tuesdays	8:00 P.M.	Tampa Municipal Hospital	No.	84%
Jackson	C. H. Harrison, M.D., Cottondale.	2nd Tuesday	3:00 P.M.	Marianna	No.	69%
Lake	W. L. Ashton, M.D., Umatilla.	1st Thursday	12:30 P.M.	Eustis	Yes	100%
Lee	H. Quillian Jones, M.D., Ft. Myers.	3rd Friday	7:30 P.M.	Lee Memorial Hospital	No.	83%
Leon-Gadsden-Liberty-Wakulla-Jefferson	J. B. Brinson, Jr., M.D., Monticello.	Quarterly	3:00 P.M.	Varies	Yes.	86%
Madison	Geo. O. Davis, M.D., Madison.					
Manatee	A. Q. English, M.D., Manatee.	1st and 3rd Tues. Oct. to May; 2nd Tues. May to Oct.	7:00 P.M.	Dixie Grande Hotel	Yes.	92%
Marion	Thos. H. Wallis, M.D., Ocala.	3rd Thursday	12:30 P.M.	Marion Hotel	Yes.	91%
Monroe	W. R. Warren, M.D., Key West.	1st Sunday	9:00 P.M.	Varies	Yes.	
Orange	J. R. Chappell, M.D., Orlando.	3rd Wednesday	8:30 P.M.	Varies	No.	81%
Palm Beach ...	R. G. Lewis, M.D., W. Palm Beach.	2nd Monday	8:00 P.M.	Court House	Yes.	77%
Pasco-Hernando-Citrus.....	Geo. R. Creekmore, M. D., Brooksville.	2nd Thursday	7:00 P.M.	Varies	Yes.	87%
Pinellas	O. O. Feaster, M.D., St. Petersburg.	Every other Friday	8:00 P.M.	500 Power & Light Bldg.	No.	81%
Polk	Herman Watson, M.D., Lakeland.	2nd Wednesday in Feb., Apr., June, Aug., Oct., Dec.	1:00 P.M.	Lakeland	Yes.	95%
Putnam	E. W. Warren, M.D., Palatka.	2nd Thursday	7:00 P.M.	James Hotel, Palatka	Yes.	64%
St. Johns	A. C. Walkup, M.D., St. Augustine.	3rd Tuesday	8:30 P.M.	Varies	Yes.	86%
St. Lucie-Okeechobee-Indian River-Martin ..	C. L. Davis, M.D., Okeechobee.	3rd Thursday	8:00 P.M.	Varies	Yes.	100%
Sarasota	F. C. Metzger, M.D., Sarasota.	2nd Tuesday	8:30 P.M.	Varies	Occasionally.	75%
Seminole	J. T. Denton, M.D., Sanford.	2nd Friday	8:00 P.M.	City Hospital		100%
Sumter	W. E. Mitchell, M.D., Coleman.	2nd Tuesday		Varies	No.	100%
Suwannee	W. C. White, M.D., Live Oak.					67%
Taylor	R. J. Greene, M.D., Perry.	Last Thursday	12:15 P.M.	Eldorado Cafe	Yes.	60%
Volusia	J. Ralston Wells, M.D., Daytona Beach.	2nd Tuesday	7:30 P.M.	Varies	Yes.	87%
Walton-Okaloosa	A. G. Williams, M.D., Lakewood.	3rd Thursday	8:00 P.M.	Varies	Occasionally.	100%
Washington-Holmes	H. A. McClure, M.D., Chipley.					56%

NOTE—Secretaries: Please submit information to complete the above schedule.

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TUBERCULOSIS ABSTRACTS

A REVIEW FOR PHYSICIANS
ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

THAT CHILDREN may have a latent form of tuberculosis is a novel and disturbing thought to most parents and teachers. The growing appreciation of the significance of childhood type of tuberculosis is creating a demand that something be done to prevent the latent form of the disease from progressing. Some are urging the development of preventoria. But there is considerable confusion in the public mind, as well as among the profession, as to what a preventorium is and what purpose it is supposed to serve. The following is a résumé of a recent article attempting to clarify the subject.

WHAT IS A PREVENTORIUM?

The term "preventorium" was first used to designate a convalescent home for adults (Brehmer's Rest at Ste. Agathe des Monts in Canada) on the ground that any depleting illness may predispose to tuberculosis and that after-care tended to prevent tuberculosis.

In 1909, New York City, through the interest of Dr. Alfred Hess, established at Farmingdale, N. J., an institution to take care of "pre-tuberculous" children. It was called a preventorium. Unlike the Canadian institution, which was designed for convalescent adults, that at Farmingdale was exclusively for children presumably threatened with tuberculosis. Similar institutions sprang up, though practices and procedures were not uniform.

Ideas as to what the preventorium was supposed to be and do were vague. However, the dominating purpose of all was a desire to provide care for the sick child. The term, "pre-tuberculous," was applied rather loosely to the child with actual tuberculosis, the child of a tuberculous household, and the child below par in health, as expressed usually in malnutrition, but all were regarded as sick children.

Quite another development in these early days was the establishment of fresh air schools and open window rooms. Their purpose was to increase the resistance of certain selected persons, who were not sick but who were presumed to be potential victims of tuberculosis. The emphasis was on health building rather than on disease prevention.

(*Continued on page* 192)

"In Old Kentucky" it's LOUISVILLE this year!

A MEDICAL MEETING that will EXCEL. EXCEL in its scientific activities—modern scientific and practical MEDICINE and SURGERY in its every phase will be brought right down to NOW in the clinical and general sessions and the eighteen sections and conjoint meetings making up the Louisville program. EXCEL in entertainment and recreational features—with something special for the ladies. Louisville, "At the Crossroads of the Nation," Tuesday, Wednesday, Thursday and Friday, November 11-14, 1930.

AT THE SOUTHERN MEDICAL ASSOCIATION meeting one gets the most complete and best rounded out program and program arrangement—and just enough entertainment, social and recreational activities, to make a medical meeting complete. The Southern Medical Association meeting has an atmosphere known to no other medical meeting—the atmosphere of the new South tempered with the cordiality and charm of the old South.

ARE you a member of the Southern Medical Association? Every physician in the South who is a member of his state and county medical societies can be and should be a member. The annual dues of $4.00 include the Association's own Journal each month, the **Southern Medical Journal—the equal of any, better than many.** "The best investment of the year," writes a prominent physician of the South. You will EVENTUALLY make that best investment—why not NOW?

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As we learned to differentiate between infection, mass infection, and actual disease, and as it became evident that the beneficial results of both preventoria and fresh air schools were to be attributed to rest, good nutrition, and a well-regulated regimen, the procedures and objectives of both types of institutions tended to merge. For that reason, it is today impossible to answer statistically how many preventoria and fresh air schools there are in the United States.

Three years ago, the Committee on Preventoria of the National Tuberculosis Association formulated this definition: "A preventorium is a twenty-four hour, twelve months institution for the care and observation of children substandard in health." The general purpose of this institution was assumed to be giving preventive care to children threatened with tuberculosis, heart disease, or other potential disability. Exact standards of eligibility were not defined but the Committee indicated the groups from which selections for the preventorium might be made, as follows:

1. Children exposed to tuberculosis at home, or in whose immediate family there has been a recent death from tuberculosis.
2. Children who have had tuberculosis, whose lesions are not active, and who appear to be in need of further care and observation.
3. Children suffering from malnutrition.
4. Children who tire easily and who are unable to carry on their class work.
5. Children frequently absent because of colds, bronchitis, etc.
6. Children suffering from rheumatic heart disease (of certain classifications).

It is now recognized that many children who need protective care do not require the exacting regimen furnished by a twenty-four hour, highly specialized preventorium. Some preventoria assume complete charge of their children, keeping them for twenty-four hours of the day the year round until they have apparently developed good resistance, while others permit their charges to return home over the week-end. The predominating purpose of these institutions is to give medical care, and secondly to provide school instruction. Another type of preventorium is essentially a school which cares for the children only during school hours and which furnishes supplementary meals, rest periods during the day, etc., while in the meantime conditions in the children's

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SUCCEEDING WALLACE-SOMERVILLE SANITARIUM, MEMPHIS, TENN.

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Here is an ideal recipe for the Diabetic Diet.

FRUIT JELLY
(Six Servings)

	Grams	Prot.	Fat	Carb.	Cal.
1 tablespoon Knox Sparkling Gelatine	7	6	....	....	....
¼ cup cold water	....	....	....	....	....
1½ cups boiling water	....	....	....	....	....
¼ cup lemon juice or 1½ teaspoons citric acid	40	....	....	4	....
Grated rind of one lemon	....	....	....	....	....
1½ grains saccharin	....	....	....	....	....
6 sections orange	75	1	....	9	....
6 sections grapefruit	90	.5	....	9	....
Total		7.5	....	22	118
One serving		1	....	4	20

Soak gelatine in cold water five minutes. Boil water and rind for two minutes. Add to gelatine and stir until dissolved. Add lemon flavoring and saccharin, strain and chill. Cut each section of fruit into three pieces. When jelly is nearly set, stir in cut fruit, mold, chill until firm and serve plain, with thin cream or whipped cream.

KNOX *is the real* **GELATINE**

A great many physicians are prescribing Knox Sparkling Gelatine for cases in which diet is an important factor as a preventive or corrective. Some physicians, however, merely prescribe "Gelatine."

There is such a great difference in gelatines that it is very necessary to designate the kind of gelatine.

For example, our attention has just been called to a case for which a physician prescribed "gelatine" in the diet of a diabetic. When indications of acid developed it was learned that the patient had unwittingly been using a ready-flavored jelly powder containing about 85% sugar, 2% acid-flavoring, 12% gelatine and coloring matter.

To guard against such errors, it is a wise precaution to stipulate Knox Gelatine and especially to call the patient's attention to the importance of the name "Knox."

This is an absolute assurance of the purest gelatine and an insurance against the presence of any foreign element likely to upset the essential balance of the diet.

Always remember to add the name "Knox" to every diet prescription in which gelatine is a factor.

We have a recipe book for diabetic diet, prepared by a widely known dietetic authority, which is entirely suitable and most helpful for distribution among diabetic patients. We will be glad to send any physician as many as he may need.

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Please send me, without obligation or expense, the booklets which I have marked. Also register my name for future reports on clinical gelatine tests as they are issued.

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homes are scrutinized and supervised by a special follow-up worker.

While preventoria, fresh air schools, open window classrooms, nutrition classes, and health camps vary widely in their procedures, the main purpose of all seems to be to give handicapped children an extra lift so as to prevent the threatened disaster of pulmonary tuberculosis in later years. Opinion in the main seems to be that children with the childhood type of tuberculosis (unless progressive) should not be regarded as sick children but rather as being threatened with disease. Certainly, children with the adult type of pulmonary tuberculosis should not be in the preventorium, not only because they are definitely ill, but also because they are potential spreaders of the disease.

There would be less confusion of thought about preventoria were discussions concerned not so much with building construction, physical equipment, staff, etc., but with the therapeutic requirements of children who need protective care. Indications for treatment of such children are:

1. Contact with the tuberculous adult, who presumably has infected the child, must be broken. This is done by removing the tuberculous adult to a sanatorium, by taking the child out of the home, or by teaching every member of the household the principles underlying the transmission of tuberculosis.

2. The child must be relieved of all possible strain; *i. e.*, strenuous exercise and burdensome school work. Rest is the cornerstone on which preventorium care is based.

3. The child's health must be built up; physical defects must be corrected and the benefits of good food, sunshine, and fresh air must be made available.

4. The psychology of the child must be adjusted so that he will not think of himself as being inferior to others gifted with greater reserve of physique, and yet restrain over-ambitious impulses.

These indications for treatment can, under ordinary circumstances, be met without the aid of a definite institution, but there are, of course, numerous "problem families," as the social worker calls them, where it is impossible to meet the requirements enumerated above. These problem families are not limited to the poor or ignorant, but include many families of intelligence and of means, who, for any reason, are unable to afford the child the necessary protection.

(*Continued on page* 196)

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This mixture furnishes 56.6 grams of carbohydrates in a form readily assimilated and thus quickly available for creating and sustaining heat and energy. The mixture supplies 15.5 grams of proteins for depleted tissues and new growth, together with 4.3 grams of mineral salts which are necessary in all metabolic processes. These food elements are to be increased in quantity and in amount of intake as rapidly as continued improvement is shown and ability to take additional nourishment is indicated.

A pamphlet devoted exclusively to this subject and a liberal supply of samples of Mellin's Food will be sent to physicians upon their request.

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While no formula can be given for the solution of the problem, an understanding of the general principles should enable any community to determine the type of preventorium care which best suits its needs. The various attempts now being made to cope with the problem should be regarded as experiments. The test of time will reveal which type of preventorium is the most efficient. Fortunately, a number of preventorium institutions are carefully following their pupils into adult life in order to learn what their subsequent experiences may be. When enough of such data have been collected, we may be able to determine more precisely what the ideal form of organized care may be.—*What Is a Preventorium? H. E. Kleinschmidt, Jour. of Pub. Health, July,* 1930.

(This review secured by the Florida Public Health Association from the National Tuberculosis Association).

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